EXTENSION'S ROLE AS AN INFORMATION SOURCE AND CHANNEL AMONG NORTHEAST TEXAS FARMERS

A Record of Study

by

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ABSTRACT

The purpose of this study was to explore the preferred information sources and delivery channels for farm-related information among selected northeast Texas farmers and describe these results in a manner which might enable the Texas AgriLife Extension Service and other agriculture-focused entities better position themselves to address the needs of their clientele.

An instrument was developed and mailed to (N = 290) randomly selected farmers from existing Extension mailing lists in four northeast Texas counties: Bowie, Rains, Rusk and Shelby. Participants had the option of responding online or via return mail.

The highest ranking interpersonal information sources were other farmers, AgriLife Extension personnel, and seminars/workshops. The lowest ranking interpersonal information sources were agricultural lenders/bankers and private consultants.

The highest ranking print-based information sources were agricultural newspapers and farm magazines. The lowest ranking print-based information sources were publications from non-governmental farm organizations and daily or weekly newspapers.

Respondents were neutral on the usefulness of television and radio as information sources. The Internet was the only electronic information source agreed to as useful by responding farmers. The lowest ranking electronic media source was social media.

The most common type of contact between farmers and the Texas AgriLife Extension Service was reading an Extension publication monthly, followed by a yearly visit to the Extension office. Farmers were satisfied with the quality of the agriculture related materials and programs provided by the Texas AgriLife Extension Service and were likely to recommend the agency to others.

The majority (91.6%) of respondents had not heard of the national Extension website *eXtension* and only 4 respondents (2.5%) had reported using the website before. Respondents felt that *eXtension* would increase the accessibility of Extension programming, should be publicized more by local Extension offices, and would make Cooperative Extension more popular.

Internet use among farmers was found to be influenced by age, highest level of education attained, Internet connection type, and other electronic devices used. Perceptions about AgriLife Extension were found to be influenced by Innovativeness Category, primary occupation, gender, and other electronic devices used.

Findings in this study support the Uses and Gratifications Theory of media use.

DEDICATION

This record of study is dedicated to my wife, Tracy Lum Triplett, and my sons Zane Elliam Triplett and Cole Hastings Triplett. They have devoted their time, patience and love to this project. I look forward to repaying their dedication and support as we begin this new chapter of our life together.

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INTRODUCTION

Background and Setting

Farmers have used Extension to assist them in addressing their farm-related questions for nearly a century. The purpose of this study was to explore the preferred information sources and delivery channels for farm-related information among selected northeast Texas farmers and describe them in a manner which might enable the Texas AgriLife Extension Service better position itself to address the needs of its clientele. This section of chapter I frames the relationship between farmers, sources and channels of information and university-provided educational assistance to the farming community.

Since tillage of the soil began, man has pursued answers to questions about his farm. Early farmers organized social groups related to farming, held expositions, published magazines and devoted newspapers to sharing farm-related information. Trips to town to purchase seed and other farm supplies became opportunities to glean pieces of information from those who sold the latest in farm technologies. The advent of the Land Grant University and her accompanying Experiment Stations and Extension Services brought professional agricultural educators into the community with information for farmers as well. Farmers read bulletins prepared by the university, talked to educators and tuned into radio (and later television) reports designed to help them improve their

farms. However, farmers did not always immediately follow this new advice which puzzled many and lead to research on the phenomenon.

The process farmers go through when making management decisions was uncovered nearly 70 years ago by Ryan and Gross (1943) when investigating the diffusion of hybrid seed corn among Iowa farmers. The study, which sought to discover why some farmers chose not to use new hybrid varieties when other farmers who used the new varieties in their community grew more corn, ultimately described many factors involved in the decision making process. The decision to use or not use a product was not a simple, but a complex one that was made after weighing many factors not always visible to the casual observer. Ryan and Gross' ground breaking research, over time, has become the foundation upon which other studies of how new innovations spread or diffuse among social systems has been built.

The advent of the personal computer and subsequent Internet brought with them even more options for farmers to use in the decision making process. In addition to traditional media outlets like print, radio and television, new options for obtaining information sprang forth almost overnight. Email, *eXtension*, public and private web sites, and applications for smart phones are now also competing as places farmers can turn when seeking information. Information is now held less in reserve, only to be provided a little at a time when it is needed. Farmers now have the ability to actively seek answers to their questions from a multitude of sources with volumes of information available any time of day. The challenge for providers of information like Extension is to stay relevant in an evolving environment.

"Extension was invented by the American people to meet a vital educational need – the need to provide an educational base for making rural life profitable, healthful, comfortable, and attractive" (Rasmussen, 1989, p. 16). As early as 1796, President George Washington brought to Congress the idea of establishing a board or office to promote agriculture (Rasmussen). The early 1800s saw President John Quincy Adams urging legislation to promote agriculture and the collection of rare seeds and plants for distribution which was later organized by Commissioner of Patents Henry Ellsworth (Rasmussen). Ellsworth, "advocated many other activities to benefit agriculture, including a series of lectures for farmers' sons on improving agriculture" (Rasmussen, p. 17). Ellsworth's annual agriculture volumes, first published in 1842, were a first federal step in acquiring and disseminating agricultural information (Rasmussen).

The foundation for Extension programming was poured through the passage of the first two land grant acts in the late 1800s. The Morrill Land Grant Act of 1862 provided each state federal lands to be sold for the purpose of, "endowment, support, and maintenance of at least one public college for the purpose of instruction in agricultural science and engineering" (Brown & Stanger, 2007, para. 1). This 1862 act was, "to provide a broad segment of the population with a practical education that had direct relevance to their daily lives" (National Association of State Universities and Land-Grant Colleges [NASULGC], 2008, p. 1). The Morrill Land Grant Act of 1890 extended additional federal funding for the fledgling land grant system, but prohibited the distribution of money to states using race as an admissions standard for land grant schools (NASULGC, 2008). As a result of the 1890 act, segregated southern states

created separate land grant institutions for black students which have become known as, "the 1890 land grants" (NASULGC, 2008, p. 1).

Essential to the future success of Extension was the passage of the Hatch Act and the work of agricultural pioneers. The Hatch Act of 1887 established Experiment Stations to, "conduct original and other research, investigations and experiments bearing directly on and contributing to the establishment and maintenance of a permanent and effective agricultural industry" (Oklahoma Agricultural Experiment Station, 2010, para. 1). Working directly with farmers in the early 1900s was federal agriculture specialist Dr. Seaman A. Knapp. In 1903, Knapp teamed with Walter Porter at Porter's farm in Kaufman County, Texas, to establish crop demonstrations (Bull, Cote, Warner, & McKinnie, 2004). Demonstrations, as a means to communicate with farmers, were to become an integral part of showing farmers new techniques. Knapp was noted for saying, "what a man hears, he may doubt; what he sees, he may possibly doubt; but what he does, he cannot doubt" (Rasmussen, 1989, p. 35). Following Porter Farm, Knapp employed agents to work with farmers in districts consisting of 10 to 20 counties (Rasmussen). As interest in his program grew, Smith County, Texas, was the first county in the nation to request and receive its own county agent. Working under Knapp's supervision, W. C. Stallings was hired in 1906 using a combination of United States Department of Agriculture (USDA) and local funds (Fehlis, 2006). On the same date as Stallings' appointment, Thomas M. Campbell was hired by the Tuskegee Institute and the USDA to assist farmers in Macon County, Georgia (Fehlis, 2006).

Construction of the Cooperative Extension System as a resource for farmers was completed in 1914 with the passage of the Smith-Lever Act. Extension was created as a joint effort between the federal government, land grant universities, and individual county governments (Tenge et al., 2002). "The [Smith-Lever] act provided for this partnership across Federal, State, and County levels to give instruction and practical demonstrations in agriculture and home economics in rural areas of the United States" (Tenge et al., p. 2).

Extension, linked with the Land Grant Universities and Agricultural Experiment Stations within each state, provides farmers with access to the results of research trials and scientific discovery in order to assist them in achieving the goals of their personal endeavors. "The practice of having agents educate local people is unique to Extension," Fehlis states, "and serves to distinguish the Land Grant Colleges from other universities" (2006, p. 4). Extension, according to Fehlis, "remains the only agency with outreach university educators serving every county in the nation" (p. 4). However, are farmers looking to Extension and its network of outreach educators for help or are they finding the information they desire elsewhere? As Extension nears its nation-wide centennial mark, one must ask the inevitable question, is it still a relevant information source for farmers today?

Farming has always been an integral and ever changing part of the American landscape. In 1850, 80% of the nation's total exports consisted of farm products and 11.86 million Americans lived on farms that averaged 200 acres in size (Rasmussen, 1989). The 1920 census, conducted by the United States Department of Commerce,

found the nation with 6.45 million farms averaging 148 acres in size and slightly less than one-half of the population (48.8% or 51.4 million Americans) living in rural areas of the country (United States Department of Commerce [USDC], 1922).

Flash forward nearly ninety years and the story of the American farm has changed dramatically. The 2007 Census of Agriculture, conducted by the USDA shows that the total number of farms in the country has dropped to 2.2 million, only 34% of the 1920 level (USDA, 2009). In contrast to the dramatic decrease in farm numbers, the average farm size has risen to 418 acres, a 282% increase in farm size (USDA, 2009). Although farm size has increased over the past 87 years, the total number of farm acres has decreased to just over 922.1 million, which is a loss of 33.8 million acres (USDA, 2009). Farm exports for 2007 totaled nearly 90 billion dollars, but only comprised 9% of the U.S. total export value of 1.04 trillion dollars (USDA, 2010). While agricultural exports are less of the total U.S. export market today, this export figure is nearly a 476% increase over the 189 million dollar annual agriculture export market reported for U.S. farms in 1850 (USDA, 2010).

Today's average farm, according to the 2007 Census of Agriculture, consists of 418 acres of land and is operated by a 57 year old farmer who is 55% likely to list his or her primary occupation as something other than farming (USDA, 2009). Fourteen percent of all U.S. farms are managed primarily by female operators (USDA). By race of principle operator, 1.4% of all farms are managed by black or African American operators, 0.5% by Asian operators, 1.6% by American Indian or Alaska Native

operators, and 95.9% are managed by white operators (USDA). Operators of Spanish, Hispanic or Latino origin manage 2.5% of all U.S. farms today (USDA).

Despite increases in farm exports to other countries, generating a profit from farm related enterprises is not guaranteed for today's farmer. Between 1992 and 2007, average total farm sales increased 60% from $84,459 per farm (USDA, 1994) to $134,807 per farm (USDA, 2009). Keeping in step with income, average total farm expenses also climbed 61% from $67,928 (USDA, 1994) to $109,359 per farm (USDA, 2009) during the same 15 year period. In 1992, 855 thousand farms reported losing money and 1.07 million farms reported making money (USDA, 1994). In 2007 the percentages are reversed, there were more farms that lost money (1.168 million) than farms that were profitable (1.037 million) (USDA, 2009). In 2007, 78% of all farms marketed less than $50,000 worth of agricultural products (USDA, 2009), compared to the 66% of all farms who fit in this category in 1992 (USDA, 1994). A farmer must make many decisions during the year to keep an operation running and there are a multitude of information providers out there vying to be the information source of choice.

Farmers have used neighboring farmers for assistance and advice both informally and formally, through across the fence conversations and the forming of formal societies. The National Grange of the Order of Patrons of Husbandry (National Grange) is the country's oldest farm organization, established in 1867 following the Civil War to, "unite private citizens in improving the economic and social position of the nation's farm population" (National Grange, 2010, para. 1). According to the National Grange,

their organization today has some 200,000 members in 40 states (National Grange). Another farmer organized group, the American Farm Bureau Federation, was established in 1919 (Farm Bureau, 2010). Farm Bureau came about as a result of the Extension movement (Farm Bureau). According to Farm Bureau, "the local Farm Bureaus served as the organizational network needed to further the Extension education efforts of the county agent" (para. 10). In 2007, the American Farm Bureau Federation boasted 6.2 million members with members in all 50 states (Farm Bureau).

Farmers willing to subscribe or purchase information sources have also had access to information via newspaper and magazine for many years. *Drovers* beef magazine was first published in 1873 as the *Chicago Daily Drovers Journal*, which chronicled cattle trading prices at the Chicago Stockyards and published these prices in newspapers distributed throughout the mid-west (Drovers, 2010). Similarly, *Farm Journal* began as a magazine intended to, "disseminate common sense information to farmers and their wives", in the Philadelphia, Pennsylvania, area in 1877 (FarmJournal, 2010, para. 2). Other farm magazines and newspapers dot the landscape from coast to coast today providing information to farmers on a regular basis.

The introduction of radio to the American public in the 1920s and television in the 1950s provided additional channels of free information delivered straight into the homes of farmers. From 1921 to 1926, radio adoption in U.S. households went from one in every 500 homes to one in every six households (Hilliard, 2001). The United States Department of Agriculture developed an extensive radio service to serve farmers in rural areas through the use of well-qualified writers, reporters and agricultural experts

(Hilliard). Even as our nation entered the twenty-first century, "there [were] more than 100 so-called agricultural radio stations still on air in the U.S.," Hilliard stated, and, "there [were] several hundred more that devote[d] at least some time every day to farm topics" (p. 324). Many local television stations have broadcast farm related market reports, informational programs, and other items of interest to their farm viewers. *U. S. Farm Report*, a weekly broadcast farm magazine that first aired on WGN television in Chicago in 1975 (WGN, 2010), now resides on RFD TV, a television channel started in 2000 that is devoted to broadcasting educational and rural lifestyle programs (RFD, 2010).

With the arrival of electronic mail and the early stages of the Internet in the public sector in the mid-1980s (Leiner et al., 2009), it would only be a matter of time before farmers began to adopt this technology as a communication and information gathering platform. A report released in 2009 by the USDA revealed that 61% of all U.S. farms owned or leased a computer, 59% had Internet access, and 36% of all farms used a computer in running their business (USDA, 2009). Land-Grant and other universities utilize the Internet individually and in concert to provide research-based information to farmers. Commercial enterprises also utilize the Internet to provide farmers with easier access to information about their products. Farmers can use Internet sites to check commodity prices at their convenience and to sell livestock to bidders located virtually anywhere in the world. In an effort to make a one-stop-shop for clientele, the website *eXtension* was created in 2007 to bring a, "national Internet-based educational network that is integral to and complements the community-based Cooperative Extension

System" (eXtension, 2010, para. 1). E-extension helps to bring 24/7/365 availability of Extension information and materials to clientele.

The list of information sources available to farmers is quite extensive. Ford and Babb (1989) examined farmers in four states in relation to sources and uses of information and found that farm magazines, other farmers, family members and friends, university/USDA publications, county Extension personnel, and bankers/financial institutions were the most often thought of as important sources of information across all farm types in the survey. Patrick and Ullerich (1996) found among large-scale farmers (farmers with gross sales over $100,000) in eight different states that their own production records, their soil fertility levels, their labor force, university specialist, and field days/conferences were the top five sources listed as being used when these farmers made production decisions. Beginning Iowa farmers, when asked to rank sources of information they perceived as being most useful to them, ranked family members (parents, siblings, and relatives) first, followed by Extension, agricultural consultants, farm organizations, agribusiness and commercial farms, commodity organizations, and government agencies (USDA Farm Service Agency and USDA Natural Resources Conservation Service) (Trede & Whitaker, 1998). The top six sources of information preferred by Florida beef cattle producers were other cattle producers, County Extension Agents, veterinarians, local feed and farm supply dealers, University specialists, and close relatives who produce cattle (Vergot, Israel & Mayo, 2005).

With the many different options available for farmers to obtain information, Extension educators are constantly faced with the question of where to best spend their

time and resources in order to effectively deliver a message that will be heard by their intended audience. Farmers, in light of the many choices available to them, must also wade through different information sources to find the information they require to help them answer the question at hand. How then, does Extension best position itself to be present with relevant information in the 'right place at the right time' so that educator and farmer connect to create a win-win situation for both?

Statement of the Problem

Farmers are faced with many challenges during these evolving economic times and therefore need reliable sources of accurate and up-to-date information to help them stay in business. A variety of information sources, both public and private, offer information to farmers today. These sources of information are using both traditional and newer, electronically-based methods of information delivery in an effort to reach as many different farmers as possible. With many different options available for farmers to obtain information, Extension educators and others with a message to spread are constantly faced with the question of where to best spend their limited time and resources in order to effectively deliver a message that will be utilized by their intended audience. A better understanding of where farmers seek information in today's society would benefit both the farmer and the information provider, enabling the farmer to quickly obtain necessary information while streamlining the provider's time and effort.

Purpose

The purpose of this study was to explore the preferred information sources and delivery channels for farm-related information among selected northeast Texas farmers and describe these results in a manner which might enable the Texas AgriLife Extension Service and other agriculture-focused entities to better position themselves in addressing the needs of their clientele.

This study was guided by four objectives:

1. Describe northeast Texas farmers by their preferred sources and channels for receiving farm-related information;
2. Describe northeast Texas farmers' perceptions about information provided by the Texas AgriLife Extension Service;
3. Describe northeast Texas farmers' perceptions about information provided by the national Extension website *eXtension*; and
4. Examine the relationship between northeast Texas farmers and their preferred sources and channels for receiving farm-related information.

Theoretical Base

The theoretical base of this study was Katz, Blumler and Gurevitch's (1974) Uses and Gratifications theory. Uses and Gratifications theory, according to Lin, considers the audience to be active, "in stark contrast to earlier views of audiences as almost completely 'passive', homogeneous and readily manipulated by the media" (1999, p. 201).

Uses and Gratification, according to Lin, is founded on three tenets: "1) viewers are goal directed in their behavior; 2) they are active media users; and 3) they are aware of their needs and select media to gratify those needs (1999, p. 201).

Uses and Gratifications theory, in this study, is bounded by the hybrid seed corn study of Ryan and Gross (1943) which served as a foundation for the theory of the Diffusion of Innovations by Rogers (1962).

Significance of the Study

This study supports the National Research Agenda of the American Association for Agricultural Education's 2011-2015 research priority area of new technologies, practices and products. This study addresses "identify potential gaps in knowledge, socioeconomic biases, and other factors that constrain effective communication and educational efforts to various target audiences" (Doerfert, 2011, p. 8).

This study, carried out successfully, might:

1. Contribute to a better understanding of the sources and information delivery channels farmers turn to for farm-related advice;
2. Provide Extension educators and other agriculture-focused entities with information to enable them to better deliver their messages to clientele;
3. Provide AgriLife Extension administration with information on how their agency is perceived by clientele;

4. Provide Cooperative Extension with information about the adoption of the website *eXtension* and perceptions about the website among potential clientele;
5. Enrich the Uses and Gratifications communication model; and
6. Provide a research model for others interested in communication theory.

Limitations of the Study

A limitation of this study was that AgriLife Extension office newsletter mailing lists and United States Department of Agriculture Farm Service Agency program participation mailing lists were utilized as the source of farmers for inclusion. There were possibly farmers in selected counties who were not on these mailing lists who might have differing responses than those received from farmers included in the study. Another limitation of this study is that only farmers in northeast Texas were selected for inclusion. There could exist geographical or other differences among farmer groups in Texas that were not realized in this study. Generalizability of this study's outcomes beyond the target group of farmers is unknown.

Definition of Terms and Abbreviations

The following is a list of operational definitions and common abbreviations used in this document. It is provided to assist the reader with comprehension of terminology.

Cooperative Extension: Is the third function of the Land Grant University system. Established in 1914 by the Smith-Lever Act, Extension in each state brings

information from the university to the people through non-formal educational settings. In this document the words Cooperative Extension and Extension may be used interchangeably.

Diffusion of Innovations: Diffusion of Innovations is a theory which describes how new ideas or practices (termed innovations) spread through a social system. This theory is based upon the work of Rogers (1962) who classified members of social systems into five categories based upon their level of 'Innovativeness'. Innovativeness, according to Rogers (2003), is, "the degree to which an individual is relatively earlier in adopting new ideas than other members of a system" (p. 267).

Digital Subscriber Line (DSL): Is operationally defined as a high speed Internet connection type that transmits data over a regular telephone line at speeds faster than dial up access.

eXtension: *eXtension* is a web-hosted interactive learning environment which is supported through an educational partnership between 74 universities in the United States. It provides 24-7 Internet access to objective and research-based information. The name of this website will be italicized throughout this document.

Farmer: A farmer is defined operationally in this study as someone who associates themselves with the production of food or fiber for their own use or to sell to other individuals. The United States Department of Agriculture defines a farmer as "any place from which $1,000 or more of agricultural products were produced and sold, or normally would have been sold, during the year" (USDA, 2009).

Hatch Act: The Hatch Act of 1877 established Experiment Stations in cooperation with land grant universities to conduct regionally focused original and applied research in agriculture. Discoveries made through Experiment Stations are often conveyed to farmers in the region through Extension education efforts.

High Speed Internet: Is operationally defined as an Internet connection type that is faster than dial-up Internet access through a phone modem.

Land Grant University: Is a public university established through either the Morrill Land Grant Act of 1862 or the second Morrill Land Grant Act of 1890, which provided states federal lands and monies to be used in the support of colleges devoted to agriculture and engineering. These universities became a partner in the federal Extension movement upon passage of the Smith-Lever Act in 1914.

Smith-Lever Act: The Smith-Lever Act of 1914 created the cooperative Extension system as a partnership between the federal government, land grant universities and county governments to provide information related to agricultural advancements made at the university level to residents of all counties in the United States.

Texas AgriLife Extension Service: Is the provider of Extension education to the citizens of Texas as a cooperative agreement with the United States Department of Agriculture, the Texas A&M University System and the County Commissioners Courts of Texas in fulfillment of the Smith-Lever Act of 1914.

United States Department of Agriculture (USDA): The United States Department of Agriculture is a federal agency which is devoted to the support of agriculture. USDA responsibilities include conducting a census of agriculture in the United States every 5

years, monitoring agricultural imports and exports, and assisting farmers through the Natural Resources Conservation Service and the Farm Service Agency.

Uses and Gratifications Theory: Uses and Gratifications is a theory of communication from Katz, Blumler and Gurevitch (1974) which considers the audience to be an active user of media. This theory of communication is, "in stark contrast to earlier views of audiences as almost completely 'passive', homogeneous and readily manipulated by the media" (Lin, 1999, p. 201).

CHAPTER II

REVIEW OF LITERATURE

The intent of this chapter was to provide a review of literature on the information sources and channels farmers use when seeking to obtain farm-related information. The purpose of this study was to explore the preferred information sources and delivery channels for farm-related information among selected northeast Texas farmers and describe these results in a manner which might enable the Texas AgriLife Extension Service and other agriculture-focused entities to better position themselves in addressing the needs of their clientele.

Farmers have many different preferences for obtaining/receiving new information. "If information is to be used, it must be disseminated in a way that best facilitates its use by agricultural producers" (Cartmell, Orr & Kelemen, 2006, p.2). The challenge for educators is to determine what method is best for the targeted audience (Cartmell et al.). According to Cartmell et al., "today, in this information- and technology-laden world, the sharing of information becomes easier and yet more complex" (p. 2). "New methods for dispensing information have surfaced, yet not all individuals have adapted to this new form of communication via electronic media such as DVDs and the Internet", (Cartmell et al., p. 2).

Farmers are not the only users of agriculture-related information. The majority of Texans live in urban settings and many of these residents have questions related to gardening, water conservation, landscape maintenance and lawn care. Woodson (2005)

examined the preferred delivery methods for information among an urban Extension audience in Texas. Participants at two gardening seminars received gardening information using different methods. Participants were provided the same information via newspaper, television, Extension fact sheet and a presentation and then were asked questions following these seminars.

Woodson (2005) found that the three most preferred methods for receiving landscape information were Extension fact sheet, garden seminar and newspaper. The three least preferred methods for receiving this information were home and garden show, friend and neighbor. The three primary methods most often used for receiving landscape information among the participants were newspaper, Extension fact sheet and books. The three primary methods least often used for receiving landscape information were home and garden show, neighbor and video.

Most participants (45.9%), according to Woodson (2005), had received information from Extension 1 to 5 times previously and 28.9% had received information from Extension 6 or more times previously. Twenty-five percent of the participants reported never receiving information from Extension prior to attending the seminar. Woodson found no differences between a clients' preferred method for receiving landscape information or primary method for receiving landscape information (print, face-to-face, or electronic) and their knowledge of landscape information on an administered post-test.

While the participants in this study by Woodson (2005) were urban and 84% female, the question that naturally arises is do Texas farmers who are rurally and

predominately male differ greatly from their urban counter parts in their preferences for learning about agriculture-related information? Knowing how to target information to clientele is essential to the success of Extension and other organizations with information to offer.

Extension exists to educate its clientele. Sanders (1966) sums it up succinctly, "providing instruction for its clientele is the first function and primary responsibility of the Cooperative Extension Service" (p. 111). Extension educators utilize a variety of methods, individually or with groups, in their attempt to influence their clients to change or adopt new practices. Typical individual learning experiences include: site visits, office visits, telephone calls, and mail requests (Sanders). Group learning experiences could include: result demonstrations, result demonstration meetings, method demonstrations, method demonstration meetings, meetings, tours, clinics, schools, short courses, camps, contests, and field days (Sanders). Extension educators can also utilize mass media methods including: news stories, newspaper columns, direct mail, exhibits, radio, television, bulletins, handbooks, fairs, and festivals to provide learning experiences to clientele (Sanders).

The educational methods outlined by Sanders nearly 50 years ago are still in the Extension educator's tool chest. These tools are now supplemented by technological advances that have increased the Extension educator's ability to reach clientele by making distance education, where the learner and educator can be separated in time or space from each other, possible (DeCamp, Richert, Singleton, Vines, & Slipher, 2001). Distance education media types available for use by Extension educators include:

compact disks, video, self-study guides, video conferencing, email, and the World Wide Web (DeCamp et al., 2001). “To know when, where, and how to provide each learning experience to best advantage is the mark of a professional Extension worker” (Sanders, 1966, p. 111). According to Sanders, “learning experiences should be selected as carefully and as specifically as a doctor writes a prescription” (p. 111).

This study of the preferred information sources and channels of northeast Texas farmers draws from two theories, Uses and Gratifications and the Diffusion of Innovations. Farmers are active users of media who select certain types of media to use based upon their needs and the media’s ability to satisfy those needs. New innovations such as new media options available to farmers will diffuse through the farming community in a deliberate and predictable fashion and will not be adopted by all members of the community at the same time.

Uses and Gratifications

Uses and Gratifications theory, according to Lin (1999), “examines media behaviors from the audience member’s view, acknowledging that media users control their own decisions” (p. 200). Uses and Gratifications theory, according to Lin (1999), “is founded on three basic tenets: 1) viewers are goal directed in their behavior; 2) they are active media users; and 3) they are aware of their needs and select media to gratify those needs” (p. 201).

Five different self-actualization needs, according to Lin (1999), are considered relevant to Uses and Gratifications:

> 1) cognitive needs, such as the need to understand; 2) affective needs that strengthen aesthetic or emotional experience; 3) integrative needs that strengthen one's confidence, credibility, or stability; 4) needs related to strengthening contact with family, friends and the world; and 5) needs related to escape or tension release. (p. 201)

The Uses element, "deals with the specific media/channel choice or the specific media type and media channel chosen for exposure as well as the duration of that media exposure" (Lin, 1999, p. 204). According to Lin, "the media/channel choice is said to be the result of habitual or purposeful decisions by the audience" (p. 204).

The Gratifications element, "is the types and degrees – as well as the short- and long-term cognitive and affective aspects – of gratifications obtained from exposure that fulfill the original needs initiating the entire media use process" (Lin, 1999, p. 205). "The degree to which an individual is satisfied with the gratifications obtained from the media use experience, can, in turn, affect or reinforce future media use motives or gratification expectations" (Lin, p. 205).

Lin (1999) sums up the basic tenets of Uses and Gratifications theory as follows: "1) individuals have different needs that prompt different choices about which media to use, and 2) even those exposed to the same media content will respond to it differently" (p. 207). Uses and Gratifications theory has been used to describe media use in many different aspects of society including media use among farmers.

Telephone users were found to, "seek a mix of interpersonal and mass media gratifications", using the phone to correspond with others and gather information

(O'Keefe & Sulanowski, 1995, p. 931). Leung and Wei (2000) found that, "mobility and immediate access were unique dimensions of cellular phone use motivations", that allowed adopters freedom of movement while maintaining access (p. 316). In regard to the Internet, Luo (2002) found, "Internet users who perceive the web as entertaining and informative generally show a positive attitude toward the web", in contrast to, "those who perceive the web as irritating" (p. 34).

Burt (2006) found that South Dakota cattle producers were motivated to use the Internet to learn about the cattle industry and to find advice for their cattle operation. Norton (2009) found that readers of the *Angus Journal* magazine trusted information in the publication more than the Internet, tended to read issues from cover to cover and preferred to receive the publication in print rather than online. Van Dalsem (2011, p. i) interviewed Nebraska farmers who had adopted the social media site Twitter and found that the adopters of this technology had four major purposes in mind, "1) farmers are using Twitter to seek information; 2) they are using it as a tool to lead others within the agriculture community; 3) they are using it as a way to build community, and 4) build their businesses". Bailey (2011) examined young agriculturists in Ohio and found that even with the availability of technology, participants still valued, "face-to-face communication as their primary source for receiving information" (p. ii). Furthermore, "the majority of respondents indicated that they would not be willing to switch from traditional, printed media to a new electronic form" Bailey (p. ii).

Diffusion of Innovations

"Diffusion", according to Rogers, "is the process in which an innovation is communicated through certain channels over time among the members of a social system" (2003, p. 5). Diffusion causes change, "in the structure and function of a social system" (Rogers, 2003, p. 6). The speed at which a new innovation is adopted by a member of a social system depends upon their level of 'Innovativeness'. "Innovativeness," according to Rogers, is "the degree to which an individual (or other unit of adoption) is relatively earlier in adopting new ideas than other members of a system" (p. 267). Rogers defines five adopter categories (listed from earliest to latest to adopt in a social system) based upon 'Innovativeness'– Innovators, Early Adopters, Early Majority, Late Majority and Laggards. In order to better understand each adopter category and their role in the community, more detailed information on each category follows:

Innovators, according to Rogers, are "venturesome" (2003, p. 282). The innovator brings the new idea into the social system from outside and must be willing to accept setbacks when a new idea is unsuccessful (Rogers). "The innovator plays a gatekeeping role in the flow of new ideas into a system" (Rogers, p. 283).

Early adopters are respected members of the community (Rogers, 2003). "The early adopter is considered by many to be 'the individual to check with' before adopting a new idea" (Rogers, p. 283). Change agents, according to Rogers, often seek out early adopters to help speed adoption of new innovations.

Members of the Early majority, according to Rogers, are deliberate and "adopt new ideas just before the average member of a system" (2003, p. 283). Early majority make up one-third of the social system and, "may deliberate for some time before completely adopting a new idea" (Rogers, p. 284).

Late majority members are, "skeptical", and, "adopt new ideas just after the average member of a system" (Rogers, 2003, p. 284). Late majority members also make up one-third of the social system (Rogers). According to Rogers, "adoption may be both an economic necessity for the late majority and the result of increasing peer pressure" (p. 284).

The final adoption category, according to Rogers, is Laggards (2003). Rogers considers Laggards "traditional". For Laggards, "decisions are often made in terms of what has been done previously, and these individuals interact primarily with others who also have relatively traditional values" (Rogers, p. 284). "The laggard's precarious economic position forces the individual to be extremely cautious in adopting innovations" (Rogers, p. 285).

Farming communities, like any other community, are comprised of people who fit into each of these adopter categories. Therefore, new channels for obtaining farm-related information are likely to diffuse through members of farming communities in a systematic manner based upon the innovativeness of the individual. During the process of deciding to adopt a new innovation, Rogers (2003) states that individuals will go through five stages: knowledge, persuasion, decision, implementation, and confirmation.

Individuals will seek information from a variety of sources using a number of different channels during this process.

Information Sources Used by Farmers

A source, according to Vergot et al. (2005), "is an individual or an institution that originates a message" (p. 2). The message, in this study, is information needed by the farmer to help them answer their farm-related questions. In addition to their own personal experiences, one of the most valuable sources of information for farmers is the collective knowledge of their neighbors which they have shared among one another using a variety of methods over the years. Nineteenth century U. S. farmers organized societies that promoted the gathering of other farmers to see new developments at agricultural fairs, a practice that is still carried out in rural and urban communities throughout the country today. According to Turner, organized farm societies in Virginia between 1811 and 1860, "held fairs, sponsored farm experiments, urged the Virginia General Assembly to establish a department of agriculture, a school or department of agriculture at the University of Virginia and conduct surveys of agricultural conditions throughout the state" (1964, p. 167).

"Group action to achieve objectives through organized effort is a well-established American tradition" (Tontz, 1964, p. 143). In 1964, according to Tontz, there were 400 agricultural organizations in the United States. The major agricultural organizations operating in the U. S. from 1874-1960 were the Grange (founded 1867),

the Farmers' Union (established 1902), the Farm Bureau (organized 1920), and the National Farmers' Organization (established in the mid-1950's) (Tontz).

The Grange began as a fraternal and educational organization for farmers (Tontz, 1964). The Grange gained in popularity and its membership swelled due to their willingness to take on the railroads over high freight prices. Membership in the Grange; however, crashed around 1875, due to the failure of another organization project, the establishment of famer cooperative business enterprises (Tontz). The Farm Bureau Federation was fostered by the county agent system and a mounting interest in the cooperative movement (Tontz). Both the Grange and Farm Bureau are still actively serving their farmer membership today.

Whether through organized events or one-to-one, farmers rely on each other for information. Mawby and Haver found that farmers', "most used source of information on existing production methods was past experience, while the most used source on new technology was the observed experience of others" (1961, p. 30). Ford and Babb (1989) also found that other farmers were frequently used as a source of information. Vergot et al. (2005) found that beef cattle producers ranked other beef cattle producers as their number one source for information.

In addition to others involved in farming, the list of possible information sources available to other farmers is quite extensive. The following studies (Cartmell et al., 2006; Ford & Babb, 1989; Mawby & Haver, 1961; Ngathou, Bukenya & Chembezi, 2006; Velandia et al., 2010; Vergot et al., 2005) illustrate the many different information sources that exist for producers seeking agriculture-related information. All of these

information sources were found to be used by farmers in obtaining information; however, some sources were used more than others and the ranking of information sources among each other differed between studies.

Mawby and Haver (1961) evaluated 24 sources of information available to farmers. Six of these sources: 1) past experience; 2) trial and error on the whole operation; 3) experimentation on a limited scale; 4) observing the experience of others; 5) reasoning from information known to be true; and 6) keeping written records - were deemed non-communicative, as they could be used without information having to pass from one person to another. Eighteen sources: 1) people from farm organizations; 2) county agents, vocational agriculture teachers, and agriculture college representatives; 3) government people; 4) truckers, custom operators, and route drivers; 5) neighbors and relatives; 6) professional farm managers; 7) banking and lending agents; 8) dealers, salesmen, and buyers; 9) demonstrations, meetings, and lectures; 10) publications of Experiment Stations and Extension Services; 11) farm magazines; 12) publications of farm organizations; 13) formal schools; 14) mail advertising; 15) newspapers; 16) radio; 17) television; and 18) auctions – were deemed communicative sources, because they required information to pass from one person to another. In addition to their own experiences and observing others, farmers were found to use a variety of other sources. Farm magazines were used most for production information, followed closely in second place by county agents, vocational agriculture teachers and agricultural college representatives. The third most used information source among these farmers was a tie between Experiment Station and Extension Service publications.

Ford and Babb (1989) evaluated 15 possible sources of information available to farmers primarily involved in field crop, livestock or dairy operations in four different states. Information sources evaluated were: 1) banker/financial institution; 2) commercial farm management service; 3) county Extension person; 4) farm magazine; 5) brokers/commodity analysts; 6) persons at universities; 7) USDA news service; 8) commercial newsletter/advisory; 9) persons in private firms; 10) persons in cooperative firms; 11) university/USDA publications; 12) paid advisors/consultants; 13) other farmers; 14) family members/friends; and 15) computer data base/network. Across all farms, farm magazines, other farmers, and family members/friends were the highest ranked information sources and were used frequently. According to Ford and Babb, "commercial farm management services, brokers, consultants and computer data bases were used by few farmers, and those using these sources were the larger farmers" (1989, p. 466).

Vergot et al. (2005) pared the list of information sources down some for their study in Florida. Ten information sources: 1) other cattle producers; 2) county Extension agent; 3) veterinarian; 4) local farm and feed supply dealers; 5) university specialists; 6) close relatives who produce cattle; 7) regional company sales representative; 8) Natural Resources Conservation Service (NRCS) agent; 9) agriculture teacher; and, 10) private consultant – were included in the list sent to beef cattle producers. Producers responding to this study indicated that other cattle producers were their preferred source of information, followed closely by county Extension agents, veterinarians, and local farm

and feed supply dealers. Sources preferred by the fewest producers were private consultants, agriculture teachers and NRCS agents.

Ngathou et al. (2006) evaluated different information sources preferred by limited-resource producers in Alabama. The study, which focused on managing agricultural risk, listed seven information sources: 1) printed materials; 2) face-to-face advice by other farmers; 3) risk management experts; 4) computer; 5) books; 6) risk management associations/marketing clubs; and, 7) radio/television programs. Producers in this study ranked printed materials, followed by face-to-face advice by other farmers as the most useful information sources for risk management information. Radio/television programs, risk management associations/marketing clubs and books were ranked least useful as risk management information sources.

Cartmell et al. (2006) examined information source preferences among Oklahoma residents. The study, which focused on limited-scale producers living in the rural/urban interface, listed 20 sources: 1) Extension; 2) Internet; 3) magazines; 4) person to person; 5) local coop; 6) Oklahoma State University; 7) agriculture organizations; 8) agricultural teacher; 9) feed store; 10) coffee shop; 11) reading; 12) courthouse; 13) television; 14) library; 15) trial and error; 16) direct mail; 17) newspaper; 18) veterinarian; 19) radio; and, 20) fairs. In this study, Extension ranked first as the information source used, followed by the Internet. Magazines and person to person tied for third most used source. The five least used sources were direct mail, newspaper, veterinarian, radio and fairs.

More recently, Velandia et al. (2010) evaluated sources of information used by cotton farmers in 11 different states to obtain precision farming related information. This study focused on four different information sources: 1) private (crop consultants, farm dealers, trade shows); 2) Extension; 3) other farmers; and, 4) media. In this study, farmers used a combination of information sources, ranging from seeking information from only one information source to using all four information sources to answer their questions.

The six previous studies, which span nearly 50 years, mention many common information sources, although the name of the source may be written slightly differently from study to study. Five of the six studies mention Extension as an information source specifically and four mention a resource person from a university in some form or fashion. The inclusion of these two sources in farm-related studies is a natural fit, as Extension and the land grant university system were developed to provide assistance to farmers. Universities have been trusted sources of information to farmers for over 120 years and Extension in the U. S. is approaching the century mark.

Extension as an Information Source

Prior to the development of Cooperative Extension, states began providing money to their agricultural colleges or state agriculture boards to conduct farmer institutes (Rasmussen, 1989). By 1890, twenty-six states had farmer institutes (Rasmussen). Iowa State University, in 1903, utilized two railroads to better reach their rural audience to promote the use of better seed corn throughout the state (Rasmussen).

According to Rasmussen, “in 1911, the high point of the effort, seventy-one trains ran in twenty-eight states, attracting an attendance of 995,220” (p. 29).

“Public service, or service to the public of the nation-state, first arose as a regular mission of American higher education through the Morrill Acts of 1862 and 1890” (Scott, 2006, p. 5). According to Scott, public service was elevated, “as a core mission equal to teaching and research” (p. 5). The state of Wisconsin was on the forefront of these events. Dubbed the ‘Wisconsin Idea’, Wisconsin’s Governor Robert La Follette advanced an idea in 1904 to place, “university faculty expertise into state government planning”, and to establish, “university Extension services throughout the state” (Scott, p. 26). Passage of the Smith-Lever Act in 1914 formally established a nation-wide Cooperative Extension Service with the land grant universities complete with county agents (Scott).

“The U.S. agricultural Extension model is undoubtedly the most widely recognized system in the world for the diffusion of technological innovations” (Rogers, 1988, p. 493). Rogers credits agricultural Extension with, “diffusing agricultural research results to farmers” (p. 493). Rogers also credits Extension with helping farmers by, “raising their level of agricultural productivity”, especially during the, “agricultural revolution occurring in the decades following World War II” (p. 493). The U. S. Extension model has been imitated world over and in the U. S. in subject areas outside agriculture (Rogers).

The Extension model has been formally in place in the United States to provide assistance to farmers for nearly 100 years. When the Smith-Lever Act was passed in

1914, a farm worker produced enough food and fiber for seven people (Rasmussen, 1989). By 1950, a single farm worker was supplying enough for 15.5 people (Rasmussen). Today the typical American farmer produces enough food to feed 155 other persons in the world (American Farm Bureau Federation, 2010). While Cooperative Extension cannot claim all the credit for this exponential increase in farm productivity over the past century, American farmers do utilize Cooperative Extension agents as a source of information available to help them in making farm related decisions.

Mawby and Haver found that county agents, along with vocational agriculture teachers and agricultural college representatives were the second most used source of production information among midwestern farmers examined (1961). Dairy farmers in upstate New York found Extension to be both the most trustworthy and most helpful source of information (Awa & Crowder, 1978). Black farmers in rural Louisiana ranked contacting their Extension agent as the second most often used source of information on farming in a study by Hunte (1989). Likewise, Radhakrishna, Rollins, and Bruening found that Pennsylvania farmers ranked their Cooperative Extension office as the second most useful human resource for information on environmental issues (1991). Vergot et al. (2005) found that among beef cattle producers in Florida, county Extension agents ranked second as an information source. Cartmell et al. (2006), surveying limited-scale landowners in Oklahoma, found that Extension was the primary source of information utilized by this group who lived in areas of the urban/rural interface. Among Iowa corn and soybean producers, Licht and Martin (2007) found that Extension was looked upon

to help them evaluate information obtained from other sources. The Extension service ranked third among Tennessee livestock producers as a source of information for animal or herd health (Jensen, English, & Menard, 2009). Small-acreage Utah landowners ranked Extension as the second most used information source for questions related to their operations (Brunson & Price, 2009).

Landowners also turn to Cooperative Extension for topics beyond traditional farming and ranching. Radhakrishna, Nelson, Franklin, and Kessler (2003) studied private longleaf pine landowners in South Carolina who ranked the Extension service as their third most used source of help and advice. Among landowners interested in invasive plant information, West Virginians listed Extension as the fourth most used information source (Steele, McGill, Chandran, Grafton, & Huebner, 2008). In a study on consumer trust, health professionals, Extension professionals, and university scientists were the most trusted sources reported for information on biotechnology among consumers from three different states (Ekanem, Mafuyai-Ekanem, Tegegne, Muhammad, & Singh, 2006).

Extension is not always reported as a top information source among farmers. Ford and Babb (1989) found that crop and livestock farmers in their survey ranked the Extension Service last of six information sources when making decisions on feed, fertilizer, and chemicals. Likewise, Patrick and Ullerich (1996) found that large-scale farmers, farm managers, and agricultural bankers did not list Extension as a top information source for farm production decisions. Interestingly, Kelley and Wehry (2006) reported that gardeners at the Philadelphia Garden Show listed Extension offices

and university web sites among the five least-used sources for information on garden topics.

As mentioned previously in this chapter, the source is the person or institution that has a message they wish to deliver (Vergot et al., 2005). The method used by the source to deliver their message to the target audience (receiver) is called a channel (Vergot et al., 2005). Just as there are many sources of information available to farmers, so are there many channels that sources can select to use to when attempting to deliver their message. The next section of this chapter will discuss information channels used by farmers in greater detail.

Information Channels Used by Farmers

Channels for information delivery to farmers also come in a variety of formats. Rogers (2003) categorizes channels into two categories – interpersonal and mass media. Interpersonal channels, Rogers states, "involve face-to-face exchange between two or more individuals" (p. 205). "Mass media channels", according to Rogers, "are a means of transmitting messages that involve a mass medium, such as radio, television, newspapers, and so on, which enables a source of one or a few individuals to reach an audience of many" (p. 205). The following studies (Bardon, Hazel and Miller, 2007; Cartmell et al., 2006; Licht and Martin, 2007; Risenberg and Gor, 1989; Vergot et al., 2005) illustrate the variety of information channels being used to reach farmers with information.

Risenberg and Gor (1989), in their study of Idaho farmers, listed nine channels: 1) on-farm demonstrations; 2) tours and field trips; 3) publications; 4) group discussion; 5) guest speakers and consultation; 6) workshops; 7) practical short courses; 8) computer-assisted instruction; and, 9) home study. This study found that the two most preferred channels for receiving information were on-farm demonstrations and tours and field trips. The two least preferred channels were home study and computer-assisted instruction.

In addition to examining information sources, Vergot et al. (2005) evaluated 16 different information channels: 1) Extension bulletins/fact sheets; 2) county Extension newsletters; 3) individual consultations with county agent; 4) county Extension web site; 5) university web site; 6) commercial web site; 7) trade show; 8) cattlemen's association tour; 9) beef cattle or forage field days at the research center; 10) research center demonstrations; 11) farm demonstrations; 12) cattle or farm magazines; 13) television programs; 14) newspaper articles; 15) radio shows; and, 16) observation of other local ranchers. The top five information channels used by these beef producers in Florida were: county Extension newsletters, cattle or farm magazines, Extension bulletins, observation of other ranchers and newspaper. The three least used information channels were commercial Internet web sites, county Extension Internet web sites and university Internet web sites.

Cartmel et al. (2006) also examined preferred information delivery channel in addition to information source. Their study of Oklahoma landowners included nine media formats: 1) direct mail; 2) magazines; 3) television; 4) Internet; 5) other; 6)

newspaper; 7) technical publications; 8) radio; and, 9) workshops. The top three preferred media formats in this study were direct mail, followed by magazines and television. Workshops, radio and technical publications were the three least preferred formats reported.

In a study involving tree farmers, Bardon et al. (2007) evaluated six different information delivery formats: 1) mail-based materials; 2) web-based materials; 3) short programs; 4) long programs; 5) landowner associations; and, 6) distance education. North Carolina landowners responding to this study fell into five different groups: the "Don't Bother Me" group was found to be unlikely to use any of these methods; the "Snail-Mailers" preferred information only by mail; the "Short-Mailers" who liked mailed information and short programs; the "Web-Mailers" who liked mailed information and the Internet; and, the "Fan Club" group who said they would likely use all the methods mentioned.

Among corn and soybean producers, Licht and Martin (2007) found that, "producers indicated a preference for mass media channels for general information and interpersonal communication channels for specific and applicable information" (p. 8). Radio was the most preferred mass communication channel, followed by magazines, the Internet, newspapers and television. Consultations were the preferred interpersonal channel among these farmers, followed by demonstrations, meetings and workshops.

Radio has been used by farmers as an information source for many years. Awa and Crowder (1978) found that New York state dairy farmers thought of radio as the second most convenient source of information behind magazines. Large-scale farmers,

farm managers, and agricultural bankers ranked radio as an important information source for making management decisions (Patrick & Ullerich, 1996). Corn and soybean farmers ranked radio as the most preferred mass media source for information because as one focus group participant stated, "if I listen to the radio that day I don't even need to open the newspaper" (Licht & Martin, 2007).

However, radio has not always surfaced near the top among studies examining farmer preferred information channels. Hunte (1989) found that black farmers "sometimes" utilized the radio to obtain farming information. Cartmell et al. (2006) found that radio was among the least preferred information source or media format for their farmers. Ngathou et al. (2006) also found that radio was one of the least preferred information sources listed by limited resource farmers seeking information on managing agricultural risk. Likewise, Steele et al. (2008) found that radio was the least reported used source of information about invasive plants among landowners in their study. Beef cattle producers in northwest Florida ranked radio as 12 out of 16 preferred information channels (Vergot et al., 2005).

In addition to radio, television is another mass media option available for information delivery to farmers. There are television programs devoted to farming in the U. S. and at least one television station, RFD TV, is devoted to rural life programming. While farmers report using television, it usually does not rate very high as an information source. Steele et al. (2008) reported that West Virginia woodland owners rated television next to last as an information source used when seeking information about invasive plants. Licht and Martin (2007) found that farmers in their study

preferred television least, noting that one farmer stated, "you've got to be quick to catch any Ag information on TV unless there's a mad cow staggering around…only negative Ag information makes it to TV" (p. 6). However, Cartmell et al. (2006) found television to rate third among preferred media formats in their study of Oklahoma farmers. Television ranked tenth out of 16 among preferred information channels of northwest Florida beef cattle producers (Vergot, et al., 2005).

In addition to broadcast media, print media serves as an important mass media information source to farmers. Newspapers, magazines, newsletters, direct mailing and other types of publications (fact sheets, field day reports, demonstration reports, etc.) are written information delivery channels available to farmers seeking information. Mawby and Haver (1961) found that farm magazines were the most important source of production information for their farmers while Extension and Experiment Station publications were ranked third among sources available. Riesenberg and Gor (1989) reported that respondents ranked publications third as a preferred information source. Richardson (1995) also found newsletters to be among the top three preferred information delivery methods of North Carolina Extension clients.

Radhakrishna et al. (2003) found newsletters and publications to be the two most preferred delivery methods for information targeted to private long leaf pine landowners. Howell and Habron (2004) found that written methods were preferred by agricultural land owners for receiving watershed information in Michigan. Similarly, Vergot et al. (2005) reported that Extension newsletters were the most used channel of information among producers examined. Ngathou et al. (2006) reported that limited resource farmers

preferred written materials when researching agricultural risk information. Cartmell et al. (2006) found that direct mail was the most preferred method for limited-scale producers in their study to receive information. Bardon et al. (2007) found that 70% of North Carolina forest landowners studied preferred mail delivery of information from Extension to other information delivery types. Brunson and Price (2009) found that small-acreage Utah landowners preferred printed materials, like the ones originating from the Extension office, as their second choice for receiving information.

Interpersonal delivery channels such as field days, workshops, and seminars are also very important ways to make information available to farmers. Riesenberg and Gor (1989) found among their Idaho farmers that on-farm demonstrations, followed by tours and field trips were the preferred methods for learning about new farming practices. Meetings ranked second and demonstrations, field days and workshops all were top ten preferred methods for receiving information form Extension by North Carolina clientele (Richardson, 1995). Patrick and Ullerich (1996) found that farmers and farm managers considered field days and conferences as valuable sources of information. Licht and Martin (2007) found that corn and soybean farmers in their study found demonstrations to be the second-most preferred interpersonal communication method.

Another very important interpersonal information channel for the farmer is one-on-one communication (telephone, in-office visit, site-visit, mail, e-mail, etc.). Hunte (1989) found that black farmers' second-most frequently used method for receiving information was consultation with their Extension agent (tied with receiving agricultural bulletins). Face-to-face was a preferred information delivery method for Pennsylvania

farmers being informed about environmental issues (Radhakrishna et al., 1991). Richardson (1995) reported personal visits with Extension personnel to be the most preferred method to receive information in his study of North Carolina producers. Personal, face-to-face communication was the second most preferred information delivery system of Michigan landowners (Howell & Habron, 2004).

Miller and Cox (2006), examining the technology transfer preferences of producers involved in sustainable agriculture, found that individual consultation was the preferred information delivery method for producers from two states and the second-most preferred method for producers from the third state in the study. Licht and Martin (2007) found that individual consultation was the most preferred communication method for corn and soybean producers in their study as well. Farmer's with alternative farming enterprises in North Carolina and Tennessee ranked Extension offices as their source of second choice for their farming enterprises (Muhammad, Isikhuemhen & Basarir, 2009). Personal contact with Extension agents was ranked third among most important information sources with producers in Utah County, Utah (Brunson & Price, 2009).

In addition to the more traditional mass media and interpersonal channels for information delivery already presented in this section, the emerging field of electronic delivery continues to expand and bring with it new options for bringing farmers and information together. The invention of the personal computer and the Internet are two major technological advancements that have enabled users to share information with anyone else who is connected in world. Today's farm computer user can access information from any university or browse new commercially available offerings with

just a few taps on the keyboard and a click on the mouse. The next section in this chapter is devoted to these topics.

Farmers and the Use of Computers and the Internet

The United States Department of Commerce reports home computer ownership by various demographic characteristics and region of the United States. In 1995, among rural residents, those in the western U.S. owned more computers, 29.5 %, compared to southern U.S. residents, 18.6 % (USDC, 1995). Computer ownership was found to be influenced by age, race, household income, and level of educational attainment (USDC).

As computers started to become more common in the home and farm, researchers began studying their use among farmers. Iddings and Apps (1990) found several factors influenced whether or not farmers owned and used computers in their operation, these were: complexity of the farm, degree of external support, age, management activities, time, experience, and the farmer's own social network. Richardson (1995), in a survey of clientele preferences for receiving information, found that respondents ranked "computer software" and "computer network" as the two methods most likely to become more important for receiving information. Richardson also found that computer software and computer network were the two methods respondents said they were unfamiliar with but were willing to use.

By 2000, overall computer and Internet penetration had increased across the U.S., but there existed a difference in home computer and Internet access based upon certain factors such as race, educational attainment and household income (USDC,

2000). Only thirty-nine percent of rural households had gained Internet access by the end of the decade (USDC).

The disparity that exists between people who have access to technology and the Internet and those that do not has been called the Digital Divide (Cyber Outreach, 2002). According to Cyber Outreach, "the information poor are typically African-Americans or Hispanics, who statistically, have lower incomes and education levels than the information rich and who often reside in rural areas or central cities" (para. 1). "Households with incomes of $75,000 or higher," according to Cyber Outreach, "are more than twenty times more likely to have access to the Internet than those at the lowest income levels and more than nine times as likely to have a computer at home" (para. 2).

As computers became more common in the home and Internet connections became more available, more farmers began to have access to computers. By 2009, the USDA reported that 61% of all farms owned or leased a computer, with 59% having Internet access (USDA, 2009). With improvements in technology and infrastructure, only 23% of farms now rely on dial-up access, compared to 47% in 2007 (USDA). Higher speed Internet access is now more available on farms, with DSL access on 36% of farms, wireless and satellite connections each on 13% of farms, and cable access on 11% of farms (USDA). Farms with higher sales and more government payments reported higher computer access and Internet access than farms with lower sales and government payments (USDA). Crop farms reported higher computer access than livestock farms, 65% to 63%, and greater Internet access, 60% to 58% (USDA). Studies

focusing on farmer use of computers and the Internet have provided mixed results, with some rating this newer information channel high and some low.

Kraft (2004) found that more than 60% of respondents to a survey about a Cornell pond management web site had made changes to their pond management based upon website recommendations. Licht and Martin (2007) found that farmer preference for the Internet varied as a mass media source but farmers liked the fact they could choose the topic they wanted to read and access information about it on demand. Batte, Diekmann, and Loibl (2007) found that among Ohio farmers, electronic information sources such as the Internet ranked fourth in preference, but, "more highly educated farmers gave statistically higher use scores to all web site and electronic newsletter sources" (p. 8). Diekmann and Batte (2009) found that while, "farmers preferred print media over interpersonal sources and broadcast media", the importance of electronic media, "increased with farm size" (p. 5). A survey of small acreage land owners in areas of expanding growth into rural areas of Utah showed that while many relied on social contacts as a source of information, they also had a strong preference for obtaining information on the Internet, ranking it first among preferred information sources (Brunson & Price, 2009).

Longleaf pine landowners in South Carolina ranked the Internet as the least useful of nine educational delivery methods (Radhakrishna et al., 2003). Howell and Habron (2004) found that Michigan landowners preferred to learn about watershed conservation through written and personal or face-to-face methods over the media and the Internet. Howell and Habron noted; however, that younger landowners and

landowners with higher levels of education had more preference for the Internet and computer as an information source. Vergot et al. (2005) found that Internet sites ranked last among their beef cattle producers in preferred information sources. Cartmell et al. (2006) found that limited scale landowners living in the rural/urban interface in Oklahoma preferred to receive information via direct mail, magazines and television over the Internet. Consumers at the 2003 Philadelphia Flower Show ranked university web sites among the five least-preferred sources of information for gardening information (Kelley & Wehry, 2006). Limited resource farmers in Alabama ranked the Internet fourth among information sources (Ngathou et al., 2006). The Internet was listed as the most frequent source of information about invasive plants by only 10% of respondents in a survey of West Virginia landowners (Steele et al., 2008). Jensen et al. (2009) found that only about 19% of livestock farmers in their survey used the Internet as a source of animal health information.

Computer technology continues to evolve and the computer is no longer a large object relegated to a desk. Today's "smart telephones" and hand-held computers place the resources of the world wide web in a farmer's pocket. A well-equipped farmer today can take a picture of something on their farm, share it with someone else via text, instant message or e-mail, or search for more information about it all while in the field. These new computer mediated uses, along with emerging social media sites, can extend interpersonal communication between farmers and information sources electronically, removing the barriers of space or time that might otherwise exist between them.

Conceptual Framework

Based upon Katz, Blumler and Gurevitch's (1974) Uses and Gratifications Theory of communications, Rogers' (2003) Diffusion of Innovations Theory and a review of the literature, a conceptual framework was developed. There are two main components to this conceptual framework, individual factors and program-related factors. Each will be addressed in this section as the conceptual framework is described in greater detail.

There are many sources of information available to farmers. These sources of information include personal sources (family/friends, other farmers, etc.), governmental sources (Farm Service Agency personnel, Natural Resources Conservation Service personnel, AgriLife Extension personnel, etc.), organizational sources (breed or commodity organization personnel, etc.) and commercial sources (feed/chemical company personnel, local veterinarian, etc.). Each of these sources is competing for the farmer to provide them with their message (information). Messages delivered by sources may differ in their quality, appropriateness, accuracy, timeliness, trustworthiness and complexity. In an effort to reach as many farmers as possible, these sources will supply their messages via many different communication channels. Channels used to deliver messages include print (magazines, newspapers, newsletters, etc.), interpersonal (seminars/workshops, field days, telephone/face-to-face conversations, etc.), electronic (Internet, email, blogs, social media, etc.) and mass media (radio, television). This information may be provided to the farmer in the form of a program either on or off the farm.

Farmers are a diverse group of individuals, each with their own personalogical factors and needs. When farmers decide to fulfill a need, such as seeking information, they will seek a message provided by a source through a delivery channel. Gratification received from the message will be used as a guide to either use or not use this source's message (program) again. Figure 1 illustrates the conceptual framework for this study.

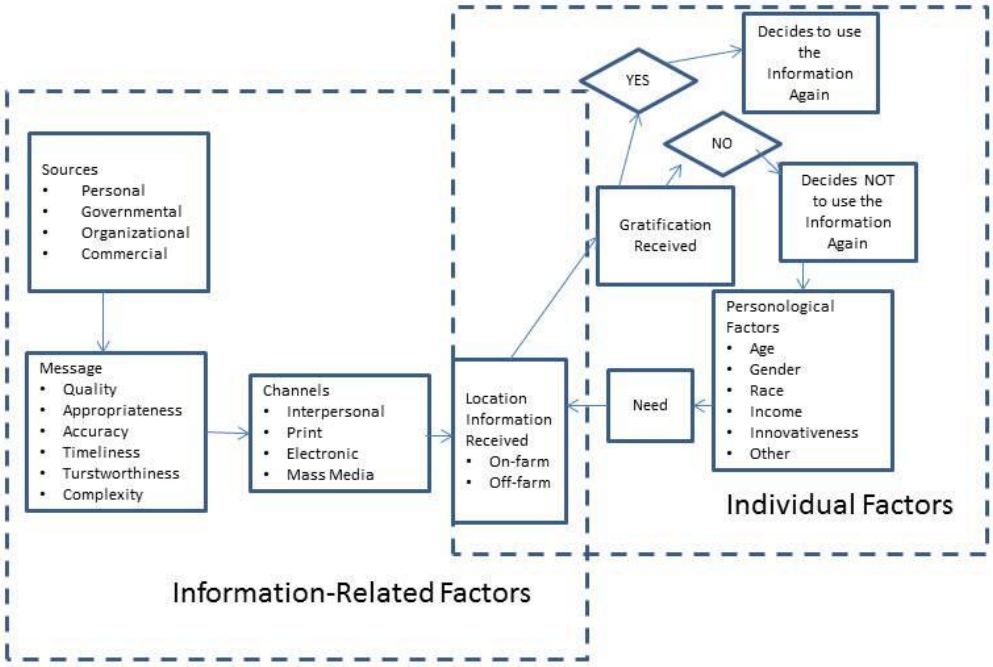

Figure 1. *Conceptual framework for the preferred information sources of northeast Texas farmers*.

CHAPTER III

METHODOLOGY

Research Design

This study was conducted using a descriptive and correlational design. Survey research is the most common descriptive methodology used in educational research (Frankel & Wallen, 2006). According to Frankel and Wallen, descriptive studies summarize selected characteristics of individuals or groups. Correlational research is conducted to determine relationships among two or more variables (Frankel & Wallen). Correlational research, according to Frankel and Wallen, is conducted to search for and describe relationships that are naturally occurring without trying to alter the relationship in any way. The purpose of this study was to explore the preferred information sources and delivery channels for farm-related information among selected northeast Texas farmers and describe these results in a manner which might enable the Texas AgriLife Extension Service and other agriculture-focused entities to better position themselves in addressing the needs of their clientele.

Subject Selection

The target population was farmers in northeast Texas in 2011. Bowie, Rains, Rusk, and Shelby counties were selected for inclusion in this study because of their variation in size and the availability of mailing lists from the local AgriLife Extension office. Existing Extension office mailing lists have been previously used for studies

examining farmer preferences for information by Burke and Sewake (2008), Riesenberg and Gor (1989), and Vergot et al. (2005).

Based on 2009 population estimates from the United States Census Bureau, the selected counties represented a cross section of East Texas counties. The smallest, Rains county, had only 11,287 residents, Shelby county had 26,812 residents, Rusk county had 49,180 residents, and the largest, Bowie county, had 93,964 residents (USDC, 2010). Farm numbers followed population numbers in selected counties. According to the 2007 Census of Agriculture (USDA, 2009), Bowie county had the most farms (1,610); Rusk county was second in farm number (1,521); Shelby county was third in the number of farms (1,123); and Rains county had the least number of farms (657).

Extension office mailing lists from these four counties were obtained for the study. Additional farmer names and addresses from the USDA's Farm Service Agency, were added to the Extension mailing list for each office. These addresses were provided by a committee member from Texas Tech University. Duplicate addresses were removed as these lists were merged. These mailing lists were considered valid sources of farmer names and addresses by the researcher.

Cochran's (1977) formula was used to determine sample size based upon recommendations by Bartlett, Kotrlik and Higgins (2001) when a categorical variable has a primary role in data analysis. The final sample size (N = 290) was based upon the assumption of a 60% response rate. A stratified random sampling technique was used to select participants for the study based upon the number of farms in each of the counties

included (Fraenkel & Wallen, 2006). Farmers selected by county were Bowie (n = 91), Rusk (n = 85), Shelby (n = 63), and Rains (n = 51).

An additional source of sample data came from a purposive sample of northeast Texas farmers who attended a day-long farming conference in Texarkana on February 9, 2012. Farmers were provided the instrument at registration the morning of the event and were asked to return it during lunch.

Instrumentation

Both an online and mail form of the questionnaire were used to collect data. The instrument was designed by the researcher based upon studies from the review of literature (Awa & Crowder, 1978; Bardon et al., 2007; Brunson & Price, 2009; Ford & Babb, 1989; Hunte, 1989; Kelsey & Mariger, 2004; Patrick & Ullerich, 1996; Riesenberg & Gor, 1989; Vergot et al., 2005).

Appendix A contains recruitment materials. The questionnaire can be seen in Appendix B. The questionnaire contained five sections examining: (a) information sources and channels; (b) Texas AgriLife Extension Service; (c) innovativeness; (d) the website *eXtension*; and (e) the characteristics of respondents.

Section A – Information Sources and Channels

Questions in section A were designed to measure participants' use of different information sources/channels. The first four questions in this section were designed to engage participants in the study as recommended by Dillman (2007). These questions

consisted of a total of 30 summated scale statements based upon information sources and/or channels. The word source was used for all questions to decrease confusion in responding to the instrument, although some statements were about delivery channels. Participants were asked to rate their level of agreement with statements about each source on a five-point scale (1 = *Strongly Disagree*, 2 = *Disagree*, 3 = *Neither Agree Nor Disagree*, 4 = *Agree*, 5 = *Strongly Agree*).

The final question in this section was designed by the researcher to measure the participants' adoption of the Internet. Participants were asked to rate their level of agreement with 10 statements about the Internet based upon a five-point summated scale (1 = *Strongly Disagree*, 2 = *Disagree*, 3 = *Neither Agree Nor Disagree*, 4 = *Agree*, 5 = *Strongly Agree*). A summated mean was also calculated for this question. Cronbach's alpha ($\alpha = .93$) was calculated for this question to measure its internal consistency.

The following convention was used in this document for describing responses to the five-point summated scales on the questions in this section: 1.0 – 1.49 = Strongly Disagree, 1.5 – 2.49 = Disagree, 2.5 -3.49 = Neither Agree Nor Disagree, 3.5 – 4.49 = Agree, and 4.5 – 5.0 = Strongly Agree.

Section B – Texas AgriLife Extension Service

Section B was designed to measure participants' perceptions and use of the Texas AgriLife Extension Service. The first question in this section asked the participant if they are familiar ('*yes*' or '*no*' response) with the programs and services of the Texas AgriLife Extension Service (this question had skip logic attached, so that if a participant

answered '*no*', they skipped answering the rest of the questions in this section). Participants that answered '*yes*' were asked to answer four additional questions in this section. The next three questions in this section were modified from Batte et al. (2007).

The first question asked the participant to respond to eight statements about their frequency of contact with the Texas AgriLife Extension Service based upon a four-point summated scale (1 = *Never*, 2 = *Weekly*, 3 = *Monthly*, 4 = *Yearly*).

The next question contained a seven-point summated scale (1 = *Very Dissatisfied*, 2 = *Dissatisfied*, 3 = *Somewhat Dissatisfied*, 4 = *Neither Satisfied Nor Dissatisfied*, 5 = *Somewhat Satisfied*, 6 = *Satisfied*, 7 = *Very Satisfied*) designed to measure satisfaction with the quality of materials and programs provided by the Texas AgriLife Extension Service. The following convention was used in this document for describing responses to this question: 1.0 – 1.49 = Very Dissatisfied, 1.5 – 2.49 = Dissatisfied, 2.5 -3.49 = Somewhat Satisfied, 3.5 – 4.49 = Neither Satisfied Nor Dissatisfied, 4.5 – 5.49 = Somewhat Satisfied, 5.5 – 6.49 = Satisfied, and 6.5 – 7.0 = Very Satisfied.

The next question in this section contained a seven point summated scale (1 = *Very Unlikely*, 2 = *Unlikely*, 3 = *Somewhat Unlikely*, 4 = *Undecided*, 5 = *Somewhat Likely*, 6 = *Likely*, 7 = *Very Likely)* designed to measure the likelihood of recommending the materials and programs provided by the Texas AgriLife Extension Service to others. The following convention was used in this document for describing responses to this question: 1.0 – 1.49 = Very Unlikely, 1.5 – 2.49 = Unlikely, 2.5 -3.49 = Somewhat

Unlikely, 3.5 – 4.49 = Undecided, 4.5 – 5.49 = Somewhat Likely, 5.5 – 6.49 = Likely, 6.5 – 7.0 = Very Likely.

The last question in this section was designed by the researcher to measure participants' perceptions about the Texas AgriLife Extension Service. Participants were asked to rate their level of agreement with nine statements about the Texas AgriLife Extension Service using a five-point summated scale (1 = *Strongly Disagree*, 2 = *Disagree*, 3 = *Neither Agree Nor Disagree*, 4 = *Agree*, and 5 = *Strongly Agree*). A summated mean was also calculated for this question. Cronbach's alpha ($\alpha = .95$) was calculated for this question to measure its internal consistency. The following convention was used in this document for describing responses to this question: 1.0 – 1.49 = Strongly Disagree, 1.5 – 2.49 = Disagree, 2.5 -3.49 = Neither Agree Nor Disagree, 3.5 – 4.49 = Agree, and 4.5 – 5.0 = Strongly Agree.

Section C - Innovativeness

Section C was designed to measure the innovativeness of participants. "Innovativeness is a relative dimension, in that an individual has more or less of this variable than others in a system," (Rogers, 2003, p. 280). "Innovativeness is a continuous variable," according to Rogers (p. 280), "and partitioning it into discrete categories is a conceptual device, much like dividing the continuum of social status into upper, middle, and lower classes." This section consisted of two questions.

The first question in this section asked participants to rate themselves on a scale of '*0 – Last Person*' to '*10 – First Person*' on a continuum based upon where they felt

they rated in relation to their peer group in respect to the time it would typically take them to begin using a new innovation on their operation. Participants were instructed to place an 'X' on the line position that would indicate where they felt they rated in relation to their peers. This position was measured using a ruler and recorded.

The second question in this section asked participants to select one item each from five different pairs of statements related to how they tend to get most of the ideas they use in their farming operation. Each response was worth one or two points and responses for these five pairs of statements were totaled. Responses worth one point were: "Personal", "Sources within your field of interest", "Sources close at hand", "Sources that don't require much personal cash" and "Sources which do not take up much personal time". Responses worth two points were: "Impersonal", "Sources relatively far away", "Sources which require personal cash outlays", and "Sources that require quite a bit of your personal time". Scores could range from 5 to 10 for this question.

The scores for the "use of new innovation continuum" and "sources of ideas for the farming operation" questions were added together to provide an *Innovativeness Score* for participants. This score could range from 5 to 20 for an individual.

Innovativeness follows a normal distribution which allows for the categorization of adopters based on innovativeness scores (Rogers, 1962). According to Christiansen (1965), self-perceived innovativeness ratings are a valid method for categorizing subjects in relation to their peers. For the *Innovativeness Score*, the highest scoring 2.5 percent of respondents were deemed *Innovators*, the next 13.5 percent were deemed

Early Adopters, the next 34 percent were deemed *Early Majority*, the next 34 percent were deemed *Late Majority* and the lowest 16 percent were deemed *Laggards*. The following convention was used in this document for placing respondents into an Innovativeness Category based upon *Innovativeness Score*: 18.00 – 17.43 = Innovators, 17.17 – 14.37 = Early Adopters, 14.10 – 12.07 = Early Majority, 12.00 – 10.00 = Late Majority, and 9.50 – 5.00 = Laggards

Section D – The Website eXtension

Section D was designed to examine participants' awareness and possible adoption of the national Cooperative Extension web site *eXtension*. The first question in this section, designed to measure awareness of *eXtension*, asked a '*yes*' or '*no*' question of whether or not the participant had ever heard of *eXtension*. This question had skip logic attached, so that if a participant answered '*no*' to this question, they skipped answering the other two questions in this section related to *eXtension*.

Participants that answered 'yes' to the first question were asked to answer two additional questions. The next question in this section asked a '*yes*' or '*no*' question of whether or not the participant had ever used *eXtension* to obtain information. This question's purpose was to determine the level of trialability of the *eXtension* website among the population.

The final question in this section was included in the study to determine participants' perception of the relative advantage of *eXtension*. According to Rogers (2003), relative advantage is one characteristic of an innovation that might help lead to

its adoption. For this question, participants were asked to rate their level of agreement with nine statements about *eXtension* based upon a five-point summated scale (1 = *Strongly Disagree*, 2 = *Disagree*, 3 = *Neither Agree Nor Disagree*, 4 = *Agree*, 5 = *Strongly Agree*). Some of the statements for this question were taken from an instrument developed by Harder (2007) for a study which measured Texas Extension agent adoption of *eXtension*. A summated mean was also calculated for this question. Cronbach's alpha ($\alpha = .83$) was calculated to measure the internal consistency of this question. The following convention was used in this document for describing responses to the five-point scale for this question: 1.0 – 1.49 = Strongly Disagree, 1.5 – 2.49 = Disagree, 2.5 - 3.49 = Neither Agree Nor Disagree, 3.5 – 4.49 = Agree, and 4.5 – 5.0 = Strongly Agree.

Section E – Characteristics of Respondents

Selected personal characteristics were measured in the instrument's final section. These variables were selected because of their relationships with information source and channel utilized as observed in previous studies (Bardon et al., 2007; Ford & Babb, 1989; Hunte, 1989; Kelsey & Mariger, 2004; Riesenberg & Gor, 1989) and to correspond with similar questions form the 2007 Census of Agriculture (USDA, 2009). This section consisted of eleven questions.

The first question in this section asked participants to list their primary occupation as either *'Farming'* or *'Other'*. The next question asked participants to provide their approximate gross sales for their farm business in 2010 within the provided categories. The next question asked for the respondent's gender with options of *'Male'*

or *'Female'*. The next question asked for the participants' race/ethnicity. Next, participants were asked if they were of Spanish, Hispanic, or Latino origin, which corresponded to a category reported in the 2007 Census of Agriculture (USDA, 2009).

Participants were asked their age range within provided categories. Participants were asked the approximate size of their farm within provided categories. The next question asked information about years farming and requested a response within provided categories. The next question requested a response about the highest level of education attained within provided categories.

The next to last question in this section focused on Internet connection type used for the farm related business with a response asked within provided categories. '*I don't have Internet access for my farm related business*' was provided as a response choice for this question. The final question in this section focused on other types of electronic devices used for farm related business other than a desktop or notebook computer. Respondents could select up to four additional electronic devices in response to this question. In addition to the provided list of electronic devices, an '*I use no other devices*' response was included as a response category for the last question.

Instrument Review

The instrument was reviewed for content validity by a panel of experts composed of faculty members from the Department of Agricultural Leadership, Education and Communications at Texas A&M University and the Department of Agricultural Education and Communications at Texas Tech University. Experts at Oklahoma State

University and Purdue University were also contacted during the creation of the instrument.

Because this study required surveying adult human subjects, a request for exempt status was submitted to the Texas A&M University Office of Research Compliance Institutional Review Board on September 21, 2011. The project was approved on November 29, 2011, with Exempt from IRB Review status and provided a protocol number 2011-0749.

A copy of the recruitment materials mailed to participants can be found in Appendix A. A copy of the instrument can be found in Appendix B.

Data Collection

Formal data collection began in December 2011. Data were collected according to Dillman's (2007) Tailored Design Method. On December 5, 2011, a pre-notice letter was mailed to participants. An invitation letter with informed consent information, questionnaire, a postage-paid return envelope, and directions on how to access and complete the online version of the survey were sent on December 9, 2011. A reminder post card was sent to participants on January 20, 2011. A final reminder letter with informed consent information, questionnaire, a postage-paid return envelope, and directions on how to access and complete the online version of the survey was mailed on February 13, 2012. Data collection ceased at 12:00 PM April 1, 2012.

During data collection 25 names were removed from the sample list for various reasons: deceased (n = 8); moved from area (n = 7); no longer involved in farming (n =

7); and contacted principle investigator and asked to be removed from study (n = 3) Twenty-five more names were drawn from the county lists to replace those which were removed. These individuals received a pre-notice, survey packet and reminder post card, but did not receive a follow-up survey packet due to the timing of the replacement surveys in relation to data collection ceasing on April 1.

Data Analysis

Data were analyzed using descriptive and inferential statistics found in the Statistical Package for Social Sciences Version 20 for Windows. The alpha level for data analysis was set *a priori* at .05. Independent variables for the study were: primary occupation; farm sales; gender; race/ethnicity; Spanish origin; age; farm size; years farming; education; Internet connection; other electronic devices; and, Innovativeness Category. Dependent variables for the study were: information source/channel; Internet usage; Contact with AgriLife Extension; Satisfaction with AgriLife Extension; Promotion of AgriLife Extension; AgriLife Extension score; and, Use of *eXtension*. It was determined *a priori* that Method 2 from Lindner, Murphy and Briers (2001) would be employed to address non-response error.

CHAPTER IV

RESULTS

The purpose of this study was to explore the preferred information sources and delivery channels for farm-related information among selected northeast Texas farmers and describe these results in a manner which might enable the Texas AgriLife Extension Service and other agriculture-focused entities to better position themselves in addressing the needs of their clientele.

This study was guided by four objectives:

1. Describe northeast Texas farmers by their preferred sources and channels for receiving farm-related information;
2. Describe northeast Texas farmers' perceptions about information provided by the Texas AgriLife Extension Service;
3. Describe northeast Texas farmers' perceptions about information provided by the national Extension website *eXtension*; and
4. Examine the relationship between northeast Texas farmers and their preferred sources and channels for receiving farm-related information.

During data collection, participants received in their instrument packet both a postage-paid return envelope and instructions for completing the instrument online. The online version of the instrument was hosted on the Texas A&M AgriLife Qualtrics Survey software website. Participants were instructed to only complete the instrument one time, either via hard copy or electronically.

One-hundred fifty-eight instruments were returned during data collection. The majority of instruments (87.3%) were returned via hard copy, with only 12.7% completed online. The overall response rate to the mailed out surveys was 44.5%. By county, response rates were Bowie 54.9%, Rains 49.0%, Shelby 39.7% and Rusk 34.1%. Of the 158 instruments processed, 31.6% were from Bowie county, 15.8% Rains county, 18.4% Rusk county, 15.8% Shelby county and 17.7% convenience sample data.

The majority of farmers completing the instrument (n = 134, 86.5%) were male. Table 1 shows the breakdown of respondents by gender. Three participants chose not to respond to this question.

Table 1. *Gender of Northeast Texas Farmers* (N = 155)

Gender	*f*	*%*
Male	134	86.5
Female	21	13.5

Note. 3 participants did not respond to this question.

Farmers of white ethnicity were the majority (n = 147, 96.1%) of responders. Farmers from four ethnic groups completed the instrument. Table 2 reports respondents by ethnicity. Five participants chose not to respond to this question.

Table 2. *Ethnicity of Northeast Texas Farmers* (*N* = 153)

Ethnicity	*f*	*%*
White	147	96.1
American Indian or Alaskan Native	3	2.0
Black or African American	2	1.3
More than One Race	1	0.7
Asian	0	0
Native Hawaiian or Other Pacific Islander	0	0

Note. 5 participants did not respond to this question.

The majority of farmers responding to the instrument (*n* =142, 99.3%) were not of Spanish, Hispanic or Latino origin. Table 3 displays respondents by Spanish, Hispanic or Latino origin. Fifteen participants chose not to respond to this question.

Table 3. *Spanish, Hispanic or Latino Origin Northeast Texas Farmers* (*N* = 143)

Spanish, Hispanic or Latino Origin	*f*	*%*
No	142	99.3
Yes	1	0.7

Note. 15 participants did not respond to this question.

Farmers ranged in age from under 45 years to over 75 years. The largest group of respondents were farmers 65 years and over (*n* = 65, 42.0%). The smallest group of respondents was farmers 44 years and younger (*n* = 10, 6.5%). Table 4 shows the

breakdown of responding farmers by age. Due to low numbers, 3 age groups "Under 25 years", "25 to 34 years" and "35 to 44 years" were combined to form a new category called "44 years and younger". Three participants chose not to respond to this question.

Table 4. *Age of Northeast Texas Farmers* (*N* = 155)

Age	*f*	*%*
44 years and younger	10	6.5
45 to 54 years	25	16.1
55 to 64 years	55	35.5
65 to 74 years	39	25.2
75 years and over	26	16.8

Note. 3 participants did not respond to this question.

Acres farmed ranged from 9 acres or less to 500 acres or more. The greatest number of farmers (*n* = 63, 40.6%) reported the approximate size of their farm operation (owned plus leased land) between 50 to 179 acres. Farms 49 acres or less in size (*n* = 29, 18.7%) was the smallest group reported. Table 5 reports responding farmers by size of farm operation. Three participants chose not to respond to this question.

Table 5. *Farm Size of Northeast Texas Farmers* (*N* = 155)

Farm Size (Owned Plus Leased Land)	*f*	*%*
1 to 9 acres	9	5.8
10 to 49 acres	20	12.9
50 to 179 acres	63	40.6
180 to 499 acres	32	20.6
500 acres or more	31	20.0

Note. 3 participants did not respond to this question.

The greatest number of farmers (*n* = 46, 30.1%) reported they had been farming 41 or more years. An equal number of farmers (*n* = 26, 17.0%) reported farming between 11 and 20 years and between 21 to 30 years, respectively. The smallest number of respondents (*n* = 11, 7.2%) reported farming 5 years or less. Table 6 displays the breakdown of responding farmers by years farming. Five participants chose not to respond to this question.

Table 6. *Years Farming by Northeast Texas Farmers* (*N* = 153)

Years Farming	*f*	%
5 years or less	11	7.2
6 to 10 years	17	11.1
11 to 20 years	26	17.0
21 to 30 years	26	17.0
31 to 40 years	27	17.6
41 years or longer	46	30.1

Note. 5 participants did not respond to this question.

The highest level of education attained in responding farmers ranged from "High School Diploma, GED or less" to "Postgraduate degree". Bachelors degree (*n* = 44, 27.8%) was most often reported as the highest level of education attained. Associates degree (*n* = 12, 7.7%) was the least reported. Table 7 shows responding farmers by highest level of education attained. Due to low numbers, several education categories were combined for reporting purposes. The categories "No high school diploma or GED" and "High school diploma or GED" were combined to form the category "High school diploma or GED or less". The categories "Masters degree", "Professional degree" and "Doctorate" were combined to form the category "Post Graduate degree". Three participants chose not to respond to this question.

Table 7. *Highest Level of Education Attained by Northeast Texas Farmers* (*N* = 155)

Highest Level of Education Attained	*f*	*%*
High school diploma or GED or less	34	21.9
Some college, but no degree	35	22.6
Associates degree	12	7.7
Bachelors degree	44	27.8
Post Graduate degree	30	19.4

Note. 3 participants did not respond to this question.

Value of farm sales in 2010 among responding farmers ranged from "Less than $5,000" to "More than $100,000". "I would rather not say" was included as an option on the instrument for those who chose not to disclose financial information and was selected by 12.0% (*n* = 18) of respondents. Farm sales ranging from "$5,000 to $24,999" was reported most often (*n* = 42, 28.0%). Farm sales of "More than $100,000" was reported least often (*n* = 21, 14.0%). Table 8 reports farmers by value of farm sales in 2010. Due to low numbers, several farm sales categories were combined for reporting purposes. The combinations reduced categories from 13 to 5. The categories "Less than $1,000", "$1,000 to $2,499" and "$2,500 to $4,999" were combined to form the category "Less than $5,000". The categories "$5,000 to $9,999, "$10,000 to $19,999" and "$20,000 to $24,999" were combined to form the category "$5,000 to $24,999". The categories "$25,000 to $39,999", "$40,000 to $49,999" and "$50,000 to $99,999" were combined to form the category "$25,000 to $99,999". The categories "$100,000 to $249,999", "$250,000 to $499,999" and "More than $500,000" were combined to form

the category “More than $100,000”. Eight participants chose not to respond to this question.

Table 8. *Value of Farm Sales in 2010 by Northeast Texas Farmers* (*N* = 150)

Value of Farm Sales in 2010	*f*	*%*
Less than $5,000	38	25.3
$5,000 to $24,999	42	28.0
$25,000 to $99,999	31	20.7
More than $100,000	21	14.0
I would rather not say	18	12.0

Note. 8 participants did not respond to this question.

Farmers were asked if they consider their primary occupation to be “Farming” or “Other”. “Other” was the primary occupation selected by the majority of respondents (*n* = 81, 60.9%). Table 9 displays the breakdown of respondents by primary occupation. Twenty-five participants chose not to respond to this question.

Table 9. *Primary Occupation of Northeast Texas Farmers* (*N* = 133)

Primary Occupation	*f*	*%*
Other	81	60.9
Farming	52	39.1

Note. 25 participants did not respond to this question.

The instrument asked respondents to report the Internet connection type they used for their farm related business from a list of six options. The Internet connection type used by the most respondents (n = 53, 34.4%) was DSL. Cable was used to access the Internet by the least number of respondents (n = 10, 6.5%). Dial Up access was also reported still being used (n = 15, 9.7%) to access the Internet. "I Don't Have Internet Access for My Farm" was included as an option on the instrument and was reported by 22.7% of responding farmers. Table 10 shows responding farmers by Internet connection type. Four participants chose not to respond to this question.

Table 10. *Internet Connection Type of Northeast Texas Farmers* (N = 154)

Internet Connection Type	*f*	*%*
DSL	53	34.4
I Don't Have Internet Access for My Farm	35	22.7
Satellite	25	16.2
Through Wireless Device	16	10.4
Dial Up	15	9.7
Cable	10	6.5

Note. 4 participants did not respond to this question.

The instrument also asked respondents to select from a list of four more types of electronic devices they might also use for their farm other than a desktop or notebook computer. Farmers were allowed to select more than one item from this list. "I use no

other devices" was also an option in the instrument which was selected by the majority (65.5%) of responding farmers. A "Smart Phone" was the single most reported used (*n* = 25, 16.9%) additional device. "Global Positioning System (GPS) units" (*n* = 9, 6.1%) and "IPad or other notepad type computing device" (*n* = 7, 4.7%) were also reported as being used. Six farmers (4.1%) reported using two other electronic devices and four farmers (2.7%) reporting using three other electronic devices. Table 11 displays farmers by Other Electronic Devices Used for Farm Related Business. Ten participants chose not to respond to this question.

Table 11. *Other Electronic Devices Used for Farm Related Business by Northeast Texas Farmers* (*N* = 148)

Other Electronic Devices Used	*f*	%
I use no other devices	97	65.5
Smart Phone (Blackberry, IPhone, Droid, etc.)	25	16.9
Global Positioning System (GPS) Unit	9	6.1
IPad or other notepad type computing device	7	4.7
Smart Phone + GPS	4	2.7
Smart Phone + IPad + GPS	4	2.7
IPad + GPS	1	0.7
Smart Phone + IPad	1	0.7
Radio Frequency Identification (RFID) tags/reader	0	0

Note. 10 participants did not respond to this question.

To develop an overall *Innovativeness Score* among participants, responding farmers were asked to complete two questions on the instrument, the results of which were added together.

In relation to innovativeness, respondents were asked to place an 'X' on a "Use of New Innovation Continuum". This continuum consisted of a line with '0 = Last Person' on one end and '10 = First Person' on the other. Participants were instructed to place the 'X' where they felt they rated in comparison to their peers in respect to the time they would typically begin using a new innovation on their farm operation. The position of this 'X' on the line was recorded as the score for this question (N = 110, M = 6.13, SD = 1.82).

In relation to information source, respondents were asked to select one item each from five pairs of statements related to the source of ideas for their farming operation. Each statement in the pair was worth 1 or 2 points. The points for each of these five pairs of questions were totaled and recorded as the score for the "Source of Ideas for Farming Operation". A participant could score between 5 and 10 points for this question (N = 110, M = 6.03, SD = 1.13).

The points from "Use of New Innovation Continuum" and "Source of Ideas for Farming Operation" were added together to produce an overall *Innovativeness Score* for respondents. This score could range from 5 to 20 (N = 110, M = 12.18, SD = 2.36). Table 12 reports the results of the "Use of New Innovation Continuum", "Source of Ideas for Farming Operation" and *Innovativeness Score*. *Innovativeness Score* was used to place farmers into an Innovativeness Category based on methodology from Rogers (1962) and

Christiansen (1965) as reported in Chapter III. Forty-eight participants chose not to answer this question.

Table 12. *Use of New Innovation Continuum, Source of Ideas for Farming Operation and Innovativeness Score of Northeast Texas Farmers* (*N* = 110)

Innovativeness Self-Assessment	*M*	*SD*
Use of New Innovation Continuum	6.13	1.82
Source of Ideas for Farming Operation	6.03	1.13
Innovativeness Score	12.18	2.36

Note. 48 participants did not respond to this question. Scale for Use of New Innovation Continuum 0 = "Last Person to Use Innovation"; 10 = "First Person to Use Innovation". Scale for Source of Ideas for Farming Operation 5 = "Lowest Score"; 10 = "Highest Score". Scale for *Innovativeness Score* 5 = "Least Innovative"; 20 = "Most Innovative".

To address non-response error in the study, Method 2 from Lindner, Murphy and Briers (2001) was employed. "Days to respond" was coded as a continuous variable on instruments as they were received from respondents. "Days to respond" was then used as an independent variable in linear regression equations involving Internet Usage, Perceptions about AgriLife Extension, and Perceptions about the website *eXtension*. In all three cases, no significant interaction was found between "Days to respond" and the dependent variable. Based upon the results, it was assumed that non-responders do not differ from responders and therefore non-response error was not considered a threat to the study. Data received from the purposive sample was not included in controlling for non-response error. Due to a low response rate to the mailed instrument, data received

from both the mailed instrument and the purposive sample was combined for final analysis.

Objective 1

Objective 1 was to describe northeast Texas farmers by their preferred sources and channels for receiving farm-related information. Results related to objective 1 are reported in the following section of this chapter.

Table 13 presents findings related to respondent's perceptions about farm related interpersonal information sources. Overall, responding farmers "agreed" with all but four of the statements related to interpersonal sources. The three highest ranking statements were "Other Farmers are useful to me in obtaining information related to my farming operation" (M = 4.13, SD = .68), "AgriLife Extension Service personnel are useful to me in obtaining information related to my farming operation" (M = 4.09, SD = .82), and "Seminars/Workshops are useful to me in obtaining information related to my farming operation" (M = 4.07, SD = .74). The two lowest ranking statements, which farmers "neither agreed nor disagreed" with were "Agricultural Lenders/Bankers are useful to me in obtaining information related to my farming operation" (M = 2.74, SD = 1.01) and "Private Consultants (paid) are useful to me in obtaining information related to my farming operation" (M = 2.57, SD = 1.13). Four participants did not respond to this question.

Table 13. *Interpersonal Information Source Preferences of Northeast Texas Farmers* (*N* = 154)

Statement	*M*	*SD*
Other Farmers are useful to me in obtaining information related to my farming operation.	4.13	.68
AgriLife Extension Service personnel are useful to me in obtaining information related to my farming operation.	4.09	.82
Seminars/Workshops are useful to me in obtaining information related to my farming operation.	4.07	.74
Field Days are useful to me in obtaining information related to my farming operation.	3.97	.87
Telephone/Face to Face Conversations are useful to me in obtaining information related to my farming operation.	3.91	.87
Feed/Chemical Company personnel are useful to me in obtaining information related to my farming operation.	3.90	.78
Family/Friends are useful to me in obtaining information related to my farming operation.	3.89	.84
My Local Veterinarian is useful to me in obtaining information related to my farming operation.	3.77	1.10
Farm Service Agency personnel are useful to me in obtaining information related to my farming operation.	3.59	.96
Natural Resources Conservation Service personnel are useful to me in obtaining information related to my farming operation.	3.34	1.05
Breed or Commodity Organization personnel are useful to me in obtaining information related to my farming operation.	3.08	1.01
Agricultural Lenders/Bankers are useful to me in obtaining information related to my farming operation.	2.74	1.01
Private Consultants (paid) are useful to me in obtaining information related to my farming operation.	2.57	1.13

Note. 4 participants did not respond to this question. Scale, 1=strongly disagree; 2=disagree; 3=neither agree nor disagree; 4=agree; 5=strongly agree.

Table 14 presents findings related to farmer perceptions about farm related print-based information sources. Overall participating farmers "agreed" with five of the seven print-based information sources listed. The two highest ranking statements were "Agricultural Newspapers are useful to me in obtaining information related to my farming operation" (*M* = 3.90, *SD* = .76) and "Farm Magazines are useful to me in obtaining information related to my farming operation" (*M* = 3.86, *SD* = .85). The two lowest ranking statements, each receiving "neither agree nor disagree" were "Publications from Non-governmental Farm Organizations (e.g. Noble Foundation) are useful to me in obtaining information related to my farming operation" (*M* = 3.29, *SD* = .96) and "Daily or Weekly Newspapers are useful to me in obtaining information related to my farming operation" (*M* = 3.23, *SD* = .94). Four participants chose not to respond to this question.

Table 14. *Print-Based Information Source Preferences of Northeast Texas Farmers* (*N* = 154)

Statement	*M*	*SD*
Agricultural Newspapers are useful to me in obtaining information related to my farming operation.	3.90	.76
Farm Magazines are useful to me in obtaining information related to my farming operation.	3.86	.85
Books are useful to me in obtaining information related to my farming operation.	3.61	.81
Government Publications (e.g. reports, fact sheets, bulletins) are useful to me in obtaining information related to my farming operation.	3.58	.76

Table 14. *Continued*

Statement	*M*	*SD*
Commercial Publications (e.g. seed and Ag product catalogs) are useful to me in obtaining information related to my farming operation.	3.56	.81
Publications from Non-governmental Farm Organizations (e.g. Noble Foundation) are useful to me in obtaining information related to my farming operation.	3.29	.96
Daily or Weekly Newspapers are useful to me in obtaining information related to my farming operation.	3.23	.94

Note. 4 participants did not respond to this question. Scale, 1=strongly disagree; 2=disagree; 3=neither agree nor disagree; 4=agree; 5=strongly agree.

Table 15 presents information related to farmer perceptions about farm related broadcast media information sources. The two broadcast media sources listed each received "neither agree nor disagree" rankings from participating farmers. "Television is useful to me in obtaining information related to my farming operation" (*M* = 3.20, *SD* = .94) was ranked higher by farmers completing the instrument than "Radio is useful to me in obtaining information related to my farming operation" (*M* = 2.99, *SD* = .92). Four participants chose not to respond to this question.

Table 15. *Broadcast Media Information Source Preferences of Northeast Texas Farmers* (*N* = 154)

Statement	*M*	*SD*
Television is useful to me in obtaining information related to my farming operation.	3.20	.94
Radio is useful to me in obtaining information related to my farming operation.	2.99	.92

Note. 4 participants did not respond to this question. Scale, 1=strongly disagree; 2=disagree; 3=neither agree nor disagree; 4=agree; 5=strongly agree.

Table 16 reports findings related to farmer perceptions about electronic information sources. Of the eight sources listed, farmers "agreed" only with "The Internet (websites) is useful to me in obtaining information related to my farming operation" (*M* = 3.64, *SD* = 1.03). The next two highest ranking sources, each receiving "neither agree nor disagree" were "E-mail is useful to me in obtaining information related to my farming operation" (*M* = 3.22, *SD* = .98) and "Electronic newsletters are useful to me in obtaining information related to my farming operation" (*M* = 3.08, *SD* = .91). The two lowest ranking sources, each of which received a ranking of "disagree" by farmers in the study were "Apps (Applications on a Smart Phone) are useful to me in obtaining information related to my farming operation" (*M* = 2.40, *SD* = .88) and "Social Media (e.g. Facebook, Twitter) is useful to me in obtaining information related to my farming operation" (*M* = 2.32, *SD* = .84). Four participants chose not to respond to this question.

Table 16. *Electronic Information Source Preferences of Northeast Texas Farmers* (*N* = 154)

Statement	*M*	*SD*
The Internet (websites) is useful to me in obtaining information related to my farming operation.	3.64	1.03
E-mail is useful to me in obtaining information related to my farming operation.	3.22	.98
Electronic Newsletters are useful to me in obtaining information related to my farming operation.	3.08	.91
Video/CD/DVDs are useful to me in obtaining information related to my farming operation.	2.93	.90
Subscriptions to a Professional Service (e.g. DTN) are useful to me in obtaining information related to my farming operation.	2.88	.97
Blogs (web-logs) are useful to me in obtaining information related to my farming operation.	2.53	.86
Apps (Applications on a Smart Phone) are useful to me in obtaining information related to my farming operation.	2.40	.88
Social Media (e.g. Facebook, Twitter) is useful to me in obtaining information related to my farming operation.	2.32	.84

Note. 4 participants did not respond to this question. Scale, 1=strongly disagree; 2=disagree; 3=neither agree nor disagree; 4=agree; 5=strongly agree.

Table 17 presents findings related to the use of the Internet by responding farmers. Farmers "agreed" with six of the ten reasons provided for using the Internet. The highest ranking uses of the Internet were "I use the Internet to find information about products" (*M* = 3.75, *SD* = 1.12), "I use the Internet to find directions to places I travel" (*M* = 3.71, *SD* = 1.17), and "I use the Internet to find agriculture information" (*M* = 3.69, *SD* = 1.11). The three lowest ranking reasons were related to sharing

photographs, banking and advertising their business. Farmers "neither agreed nor disagreed" with "I use the Internet to share photographs with others" (*M* = 3.08, *SD* = 1.14) and "I use the Internet for banking purposes" (*M* = 3.04, *SD* = 1.43). Farmers "disagreed" with the statement "I use the Internet to advertise my farm business" (*M* = 2.45, *SD* = 1.09). Two participants chose not to respond to this question.

Table 17. *Internet Use by Northeast Texas Farmers* (*N* = 156)

Statement	*M*	*SD*
I use the Internet to find information about products.	3.75	1.12
I use the Internet to find directions to places I travel.	3.71	1.17
I use the Internet to find agriculture information.	3.69	1.11
I use the Internet for e-mail.	3.63	1.19
I use the Internet to purchase items.	3.52	1.22
I use the Internet to obtain news information.	3.51	1.12
I use the Internet to check livestock or commodity reports.	3.29	1.10
I use the Internet to share photographs with others.	3.08	1.14
I use the Internet for banking purposes.	3.04	1.43
I use the Internet to advertise my farm business.	2.45	1.09

Note. 2 participants did not respond to this question. Scale, 1=strongly disagree; 2=disagree; 3=neither agree nor disagree; 4=agree; 5=strongly agree. Summated Mean = 3.41, *SD* = .99, "Neither agree Nor Disagree"

Objective 2

Objective 2 was to describe northeast Texas farmers' perceptions about information provided by the Texas AgriLife Extension Service. Results related to objective 2 are reported in the following section of this chapter.

The majority of respondents (84.2%) were familiar with AgriLife Extension programs and services. Table 18 presents the findings related to this question. One participant chose not to respond to this question.

Table 18. *Familiarity of Northeast Texas Farmers with the Texas AgriLife Extension Service* (*N* = 147)

Familiarity with the Texas AgriLife Extension Service	*f*	*%*
Yes	133	84.2
No	24	15.2

Note. 1 participant did not respond to this question.

Respondents were asked to indicate how often they had contact with the Texas AgriLife Extension Service in relation to certain information delivery channels. Responses to this question are summarized in Table 19. Twenty-seven participants chose not to respond to this question.

In regard to the statement "Read an Extension publication" the majority (*n* = 92, 70.2%), responded "monthly" and the next largest segment, 20.6% (*n* = 27), responded "yearly". "Never" was reported by 3.1% of farmers.

In regard to the statement "Visited an Extension website" 39.1% (*n* = 50) responded "never" and 25% (*n* = 32) responded "monthly". "Weekly" was reported by 7.0% of farmers.

The majority of farmers (*n* = 80, 61.5%) responded to the statement "Visited an Extension office" with "yearly" while 5.4% (*n* = 7) responded "never". "Monthly", the second most reported response, was the reply provided by 26.9% of farmers.

"Yearly" (*n* = 59, 45.7%) was the most popular response to the statement "Called or Spoken to an Extension agent". Many farmers (37.2%) reported calling or speaking to an Extension agent "monthly". Four farmers (3.1%) responded to this statement with "never".

In response to the statement "Attended an Extension meeting", the majority of farmers (*n* = 68, 53.1%) indicated "yearly" and 12.5% (*n* = 16) indicated "never". "Monthly" attendance at Extension meetings was reported by 34.4% or farmers.

The majority of farmers (*n* = 70, 54.3%) reported "never" in response to the statement "An Extension agent visited my farm". The next most common response to this statement was "yearly" (*n* = 52, 40.3%). Six farmers reported that an Extension agent visited their farm "monthly".

In response to the statement "Listened to an Extension report on the radio", the most popular response (46.2%) was "never". "Yearly" was the next most provided response (21.5%). Twenty-four farmers (18.5%) reported listening to an Extension report on the radio "weekly".

Nearly half (48.1%) of all farmers reported “never” having “watched an Extension report on television”. “Monthly” was the next most common response to this statement (22.9%). Ten farmers (7.6%) reported watching an Extension report on television “weekly”.

Table 19. *Contact Type and Frequency with the Texas AgriLife Extension Service by Northeast Texas Farmers* (*N* = 131)

Statement	*f*	*%*
Read an Extension publication		
Weekly	8	6.1
Monthly	92	70.2
Yearly	27	20.6
Never	4	3.1
Visited an Extension website		
Weekly	9	7.0
Monthly	32	25.0
Yearly	37	28.9
Never	50	39.1
Visited an Extension office		
Weekly	8	6.2
Monthly	35	26.9
Yearly	80	61.5
Never	7	5.4

Table 19. *Continued*

Statement	*f*	%
Called or Spoken to an Extension agent		
Weekly	18	14.0
Monthly	48	37.2
Yearly	59	45.7
Never	4	3.1
Attended an Extension meeting		
Weekly	0	0
Monthly	44	34.4
Yearly	68	53.1
Never	16	12.5
An Extension Agent visited my farm		
Weekly	1	0.8
Monthly	6	4.7
Yearly	52	40.3
Never	70	54.3
Listened to an Extension report on the radio		
Weekly	24	18.5
Monthly	18	13.8
Yearly	28	21.5
Never	60	46.2

Table 19. *Continued*

Statement	*f*	%
Watched an Extension report on television		
Weekly	10	7.6
Monthly	30	22.9
Yearly	28	21.4
Never	63	48.1

Note. 27 participants did not respond to this question.

Responding farmers were asked to report how satisfied they were with the quality of agriculture related materials and programs provided by the Texas AgriLife Extension Service over the past two years. Farmers were "satisfied" (*M* = 5.97, *SD* = .97) with the quality of agriculture related materials and programs provided by AgriLife Extension. The response to this question is summarized in Table 20. Twenty-six participants chose not to respond to this question.

Table 20. *Satisfaction of Northeast Texas Farmers with the Quality of Agriculture Related Materials and Programs Provided by the Texas AgriLife Extension Service* (*N* = 132)

Statement	*M*	*SD*
Overall how satisfied are you with the quality of agriculture related materials and programs provided by the Texas AgriLife Extension Service over the past two years?	5.97	.97

Note. 26 participants did not respond to this question. Scale, 1=very dissatisfied; 2=dissatisfied; 3=somewhat dissatisfied; 4=neither satisfied nor dissatisfied; 5=somewhat satisfied; 6=satisfied; 7=very satisfied.

Responding farmers were also asked to report how likely they were to recommend the agriculture and natural resources materials and programs of the Texas AgriLife Extension Service to others. Farmers were "likely" (*M* = 5.97; *SD* = 1.30) to recommend the agriculture and natural resources materials and programs of the AgriLife Extension to others. The response to this question is reported in Table 21. Twenty-five participants chose not to respond to this question.

Table 21. *Likelihood of Northeast Texas Farmers Recommending the Agriculture and Natural Resource Materials and Programs of the Texas AgriLife Extension Service to Others* (*N* = 133)

Statement	*M*	*SD*
How likely are you to recommend the agriculture and natural resources materials and programs of the Texas AgriLife Extension Service to others?	5.97	1.30

Note. 25 participants did not respond to this question. Scale, 1=very unlikely; 2=unlikely; 3=somewhat unlikely; 4=undecided; 5=somewhat likely; 6=likely; 7=very likely.

Participants were asked to respond to a series of statements about information from the Texas AgriLife Extension Service. Table 22 summarizes the findings among responding farmers related to this question. Farmers "agreed" with all statements related to information from AgriLife Extension. The highest ranking statements were "Information from Extension is helpful" (*M* = 4.30, *SD* = .62), "Information from Extension is understandable" (*M* = 4.23, *SD* = .56) and "Information from Extension is accurate" (*M* = 4.23, *SD* = .56). The two lowest ranking statements were "Information

from Extension is timely" (*M* = 4.08, *SD* = .60) and "Information from Extension is unbiased" (*M* = 4.05, *SD* = .70). Twenty-five participants did not respond to this question.

Table 22. *Perceptions Held by Northeast Texas Farmers about Information from the Texas AgriLife Extension Service* (*N* = 133)

Statement	*M*	*SD*
Information from Extension is helpful.	4.30	.62
Information from Extension is understandable.	4.23	.56
Information from Extension is accurate.	4.23	.58
Information from Extension is relevant.	4.17	.59
Information from Extension is trustworthy.	4.17	.63
Information from Extension is easily obtained.	4.14	.74
Information from Extension is user friendly.	4.11	.71
Information from Extension is timely.	4.08	.60
Information from Extension is unbiased.	4.05	.70

Note. 25 participants did not respond to this question. Scale, 1=strongly disagree; 2=disagree; 3=neither agree nor disagree; 4=agree; 5=strongly agree. Summated Mean = 4.17, *SD* = .58, "Agree".

Objective 3

Objective 3 was to describe northeast Texas farmers' perceptions about information provided by the national Extension website *eXtension*. Results related to objective 3 are reported in the following section of this chapter.

Respondents were first asked whether or not they had heard of the national Extension website *eXtension.* The majority (*n* = 142, 91.6%) of farmers reported they had not heard of the website. Table 23 reports the results of this question. Three participants chose not to respond to this question.

Table 23. *Familiarity of Northeast Texas Farmers with the Website eXtension* (*N* = 155)

Familiarity with *eXtension* Website	*f*	*%*
No	142	91.6
Yes	13	8.4

Note. 3 participants did not respond to this question.

Responding farmers were then asked whether or not they had used the website *eXtension*. Eleven (11) farmers responded to this question, with only four (36.4%) responding they had used the website. Table 24 reports the results of this question. One hundred and forty-seven participants did not respond to this question.

Table 24. *Use of the Website eXtension by Northeast Texas Farmers* (*N* = 11)

Use of the Website *eXtension*	*f*	*%*
No	7	63.6
Yes	4	36.4

Note. 147 participants did not respond to this question.

Respondents were then asked to respond to a series of statements about the website *eXtension*. Eleven farmers responded to this question. Responding farmers "agreed" with eight of the nine statements about *eXtension*. The highest ranking statements related to the website *eXtension* were "*eXtension* increases the accessibility of Extension programming" (*M* = 3.91, *SD* = .54), "*eXtension* should be publicized more by local Cooperative Extension offices" (*M* = 3.91, *SD* = .94), "Cooperative Extension will become more popular due to the addition of *eXtension*" (*M* = 3.82, *SD* = .60), and "I envision myself trusting information obtained from *eXtension*" (*M* = 3.82, *SD* = .75). Farmers "neither agreed nor disagreed" about the statement "*eXtension* will make the local Extension office less important in the future" (*M* = 2.55, *SD* = .93). Table 25 reports the results of these findings related to the website *eXtension*. One hundred and forty-seven participants did not respond to this question.

Table 25. *Perceptions Held by Northeast Texas Farmers about the Website eXtension* (*N* = 11)

Statement	*M*	*SD*
eXtension increases the accessibility of Extension programming.	3.91	.54
eXtension should be publicized more by local Cooperative Extension offices.	3.91	.94
Cooperative Extension will become more popular due to the addition of *eXtension*.	3.82	.60
I envision myself trusting information obtained from eXtension.	3.82	.75
eXtension will provide agriculture information relative to my particular farm.	3.73	.79

Table 25. *Continued*

Statement	*M*	*SD*
I envision finding answers to my questions faster by using eXtension.	3.60	.97
I envision using eXtension to answer my questions.	3.55	.69
eXtension will increase my use of Cooperative Extension resources.	3.45	.82
eXtension will make the local Extension office less important in the future.	2.55	.93

Note. 147 participants did not respond to this question. Scale, 1=strongly disagree; 2=disagree; 3=neither agree nor disagree; 4=agree; 5=strongly agree. Summated Mean = 3.55, *SD* = .52, "Agree"

Objective 4

Objective 4 was to examine the relationship between northeast Texas farmers and their preferred sources and channels for receiving farm-related information. Results related to objective 4 are reported in the following section of this chapter.

To describe the relationship between Internet Usage and selected personal characteristics, (Innovativeness Category; Primary Occupation; Value of Farm Sales in 2010; Gender; Ethnicity; Spanish, Hispanic or Latino Origin; Age; Farm Size; Years Farming; Highest Level of Education Attained; Internet Connection Type; and Other Electronic Devices Used) , a linear regression using the stepwise method was constructed. The analysis resulted in a three predictor plus constant equation.

The first predictor to enter the equation was "Internet Connection Type". With the constant, this variable explained 17.5% of the variance in Internet Usage among

farmers. Two additional variables explained an additional 14.9% of the variance in Internet Usage among the farmers. These variables were "Other Electronic Devices Used" and "Age". Together, these three variables plus the constant explained 32.4% of the variance in Internet Usage among Northeast Texas farmers participating in this study (Table 26).

Table 26. *Linear Regression of Internet Use by Personal Characteristics of Northeast Texas Farmers*

Model	*R*	R^2	*SE (est)*
Internet Connection Type	.42	.18	.88
Internet Connection Type + Other Electronic Devices Used	.53	.29	.82
Internet Connection Type + Other Electronic Devices Used + Age	.57	.32	.80

Table 27 reports the ANOVA statistic from these models. Model 1 (Internet Connection Type) plus the constant was significant F (1, 80) = 16.91 ($p < .05$). Model 2 (Internet Connection Type + Other Electronic Devices Used) plus the constant was significant F (2, 79) = 15.77 ($p < .05$). Model 3 (Internet Connection Type + Other Electronic Devices Used + Age) plus the constant was also significant F (3, 78) = 12.45 ($p < .05$).

Table 27. *ANOVA for Linear Regression of Internet Use by Personal Characteristics of Northeast Texas Farmers*

Model		*SS*	*Df*	*MS*	*F*	*p*
1	Regression	12.97	1	12.97	16.91	<.01
	Residual	61.34	80	.77		
	Total	74.31	81			
2	Regression	21.20	2	10.60	15.77	<.01
	Residual	53.10	79	.67		
	Total	74.31	81			
3	Regression	24.06	3	8.02	12.45	<.01
	Residual	50.24	78	.64		
	Total	74.31	81			

Post hoc analysis of the data collected also revealed differences among the farmers participating in the study in the following personal characteristics: Age, Highest Level of Education Attained, Internet Connection Type, and Other Electronic Devices Used.

Statistically significant and practical differences existed in Internet Usage based upon Age (Table 28). While no differences were found between farmers in the “44 years and younger”, “45 to 54”, or “55 to 64” age groups, there were differences between these first three age groups and farmers in the “65 to 74” and “75 or older” age groups. Farmers in the three youngest age groups tended to “Agree” on statements related to

Internet Usage while farmers in the two older age groups tended to "Neither Agree Nor Disagree" on statements related to Internet Usage.

Farmers "44 years and younger" (M = 3.80, SD = .42), "45 to 54" (M = 3.80, SD = .76) and "55 to 64" (M = 3.62, SD = 1.05) reported statistically significant ($p < .05$) higher Internet Usage scores than farmers "75 or older" (M = 2.73, SD = 1.00). Although not statistically significant, farmers "65 to 74" reported lower Internet Usage "Neither Agree Nor Disagree" than the three younger age groups of farmers in the study. Farmers "65 to 74" and farmers "75 or older" were not statistically or practically different in their reported Internet Usage.

Table 28. *Internet Usage by Age of Northeast Texas Farmers* (N = 153)

Age	*n*	*M*	*SD*	*F*	*p*
44 or younger	10	3.80[ab]	.42	6.00	<.01
45 to 54	25	3.80[ab]	.76		
55 to 64	55	3.62[ab]	1.05		
65 to 74	37	3.22[bc]	.92		
75 and older	26	2.73[c]	1.00		

Note. Scale, 1=strongly disagree; 2=disagree; 3=neither agree nor disagree; 4=agree; 5=strongly agree. Means with different superscripts are statistically significant at $p < .05$.

When Highest Level of Education Attained was examined, one statistical and practical difference was discovered (Table 29). The highest reported users of the

Internet, farmers with "Bachelors degree" (M = 3.82, SD = .84) and farmers with "Associates degree" (M = 3.50, SD = 1.00), tended to "Agree" on statements related to Internet Usage.

Farmers in the other three education categories tended to "Neither Agree Nor Disagree" on statements related to Internet Usage. Farmers with "Some College but no degree" were the next highest users of the Internet (M = 3.34, SD = 1.03). Interestingly, farmers with "Post Graduate degree" were the next to lowest users of the Internet (M = 3.23, SD = 1.10). Farmers with the lowest use of the Internet were "High School Diploma, GED or Lower" (M = 3.06, SD = .91). A statistical and practical difference (p < .05) was found between farmers with "Bachelors degree" (M = 3.82, SD = .84) who tended to "Agree" on statements related to Internet Usage and farmers with "High School Diploma, GED or Lower" (M = 3.06, SD = .91) who tended to "Neither Agree Nor Disagree" on statements related to Internet Usage.

Table 29. *Internet Usage by Highest Level of Education Attained by Northeast Texas Farmers* (*N* = 153)

Highest Level of Education Attained	*n*	*M*	*SD*	*F*	*p*
High School diploma, GED or lower	5	3.06[b]	.91	3.31	.01
Some College but no degree	35	3.34[ab]	1.03		
Associates degree	12	3.50[ab]	1.00		
Bachelors degree	44	3.82[a]	.84		
Post Graduate	30	3.23[ab]	1.10		

Note. Scale, 1=strongly disagree; 2=disagree; 3=neither agree nor disagree; 4=agree; 5=strongly agree. Means with different superscripts are statistically significant at $p < .05$.

Internet Connection Type was also found to have a significant and practical effect on Internet Usage (Table 30). The difference observed in Internet Usage, was broadly between farmers with Internet access for their farm and those without Internet access for their farm. Regardless of Internet Connection Type, all farmers with Internet access tended to "Agree" on statements related to Internet Usage. Not surprisingly, farmers without Internet access tended to "Disagree" on statements related to Internet Usage. Farmers reporting "I Don't Have Internet Access" had statistically lower ($p < .05$) Internet Usage scores ($M = 2.26$, $SD = .95$) than farmers with DSL connections ($M = 3.89$, $SD = .64$), Satellite connections ($M = 3.76$, $SD = .72$), Cable access ($M = 3.70$, $SD = .82$), Dial Up access ($M = 3.57$, $SD = .85$) or Internet access through a Wireless device ($M = 3.50$, $SD = .73$).

Table 30. *Internet Usage by Internet Connection Type of Northeast Texas Farmers* (*N* = 153)

Internet Connection Type	*n*	*M*	*SD*	*F*	*p*
Dial Up	14	3.57[a]	.85	21.01	<.01
DSL	53	3.89[a]	.64		
Cable	10	3.70[a]	.82		
Satellite	25	3.76[a]	.72		
Through a Wireless Device	16	3.50[a]	.73		
I Don't Have Internet Access	35	2.26[b]	.95		

Note. Scale, 1=strongly disagree; 2=disagree; 3=neither agree nor disagree; 4=agree; 5=strongly agree. Means with different superscripts are statistically significant at $p < .05$.

"Other Electronic Devices Used" was also found to have a significant effect ($p < .05$) on Internet Usage. Table 31 presents the findings related to the use of other electronic devices and use of the Internet. However, because of the low number of farmers using either an Ipad or other notepad computing device plus a GPS unit and the low number of farmers using a smart phone plus an Ipad or other notepad computing device, post hoc analysis to determine where the differences exist was not possible.

Table 31. *Internet Usage by Other Electronic Devices Used by Northeast Texas Farmers* (*N* = 147)

Other Electronic Devices Used	*n*	*M*	*SD*	*F*	*p*
I use no other electronic device	96	3.22	1.05	3.67	<.01
Smart Phone	25	3.88	.67		
Ipad or other notepad computing device	7	3.14	.90		
GPS	9	4.00	.00		
Smart Phone + GPS	4	4.25	.50		
Ipad or other notepad computing device + GPS	1	2.00			
Smart Phone + Ipad or other notepad computing device + GPS	4	4.50	.58		
Smart Phone + Ipad or other notepad computing device	1	4.00			

Note. Scale, 1=strongly disagree; 2=disagree; 3=neither agree nor disagree; 4=agree; 5=strongly agree.

To describe the relationship between Perceptions about AgriLife Extension and selected personal characteristics, (Innovativeness Category; Primary Occupation; Value of Farm Sales in 2010; Gender; Ethnicity; Spanish, Hispanic or Latino Origin; Age; Farm Size; Years Farming; Highest Level of Education Attained; Internet Connection Type; and Other Electronic Devices Used), a linear regression using the stepwise method was constructed. The analysis resulted in a three predictor plus constant equation.

The first predictor to enter the equation was “Innovativeness Category”. Along with the constant, this variable explained 26.5% of the variance in Perceptions about AgriLife Extension among farmers. Two additional variables explained another 9.2% of the variance in Perceptions about AgriLife Extension. These variables were “Other

Electronic Devices Used" and "Gender". Together, these three variables plus the constant explained 35.8% of the variation in Perceptions about AgriLife Extension among Northeast Texas farmers participating in this study (Table 32).

Table 32. *Linear Regression of Perceptions about AgriLife Extension by Personal Characteristics of Northeast Texas Farmers*

Model	*R*	R^2	*SE (est)*
Innovativeness Category	.52	.27	.48
Innovativeness Category + Other Electronic Devices Used	.56	.31	.47
Innovativeness Category + Other Electronic Devices Used + Gender	.60	.36	.45

Table 33 reports the ANOVA statistic from these models. Model 1 (Innovativeness Score) plus the constant was significant F (1, 68) = 24.56 ($p < .05$). Model 2 (Innovativeness Score + Other Electronic Devices Used) plus the constant was significant F (2, 67) = 15.31 ($p < .05$). Model 3 (Innovativeness Score + Other Electronic Devices Used + Gender) plus the constant was also significant F (3, 66) = 12.26 ($p < .05$).

Table 33. *ANOVA for Linear Regression of Perceptions about AgriLife Extension by Personal Characteristics of Northeast Texas Farmers*

Model		*SS*	*Df*	*MS*	*F*	*p*
1	Regression	5.63	1	5.63	24.56	<.01
	Residual	15.58	68	.23		
	Total	21.20	69			
2	Regression	6.65	2	3.32	15.31	<.01
	Residual	14.55	67	.22		
	Total	21.20	69			
3	Regression	7.59	3	2.53	12.26	<.01
	Residual	13.61	66	.21		
	Total	21.20	69			

Post hoc analysis of the data collected also revealed differences among the farmers participating in the study in the following personal characteristics: Innovativeness Category, Primary Occupation, Gender, and Other Electronic Devices Used.

Statistical and practical differences existed in Perceptions about AgriLife Extension based upon Innovativeness Category (Table 34). Innovators tended to "Strongly Agree" on statements related to AgriLife Extension while farmers in the other four Innovativeness categories (Early Adopter, Early Majority, Late Majority, and Laggards) tended to "Agree" on statements related to AgriLife Extension. Due to a lack of variance among "Innovators", Levene's Statistic was applied to the data and found to

be significant ($p < .05$). Therefore, the following results related to "Innovators" remain suspect.

"Innovators" ($M = 5.00$, $SD = .00$) were significantly and practically different ($p < .05$) from "Late Majority" ($M = 4.12$, $SD = .49$) and "Laggard" ($M = 3.70$, $SD = .68$) farmers. While not practically significant, "Early Adopter" ($M = 4.44$, $SD = .51$) and "Early Majority" ($M = 4.29$, $SD = .53$) farmers were also statistically different ($p < .05$) from "Laggard" farmers. "Late Majority" farmers did not differ from "Laggard" farmers.

Table 34. *Perceptions about AgriLife Extension by Innovativeness Category of Northeast Texas Farmers* ($N = 93$)

Innovativeness Category	*n*	*M*	*SD*	*F*	*p*
Innovators	3	5.00^{ac}	.00	5.29	<.01
Early Adopters	16	4.44^{ac}	.51		
Early Majority	31	4.29^{ac}	.53		
Late Majority	33	4.12^{bc}	.49		
Laggards	10	3.70^{bd}	.68		

Note. Scale, 1=strongly disagree; 2=disagree; 3=neither agree nor disagree; 4=agree; 5=strongly agree. Means with different superscripts are statistically significant at $p < .05$.

Although not practically significant, there was a statistically significant difference in farmers' perceptions about AgriLife Extension based upon primary occupation. While both farmers who listed their primary occupation as "Farming" and farmers who listed their primary occupation as "Other" tended to "Agree" to statements

about AgriLife Extension (Table 35), farmers with a primary occupation of "Other" (M = 4.25, SD = .47) reported a higher score for perceptions about AgriLife Extension (p < .05, two tailed) than farmers with a primary occupation of "Farming" (M = 4.02, SD = .62).

Table 35. *Perceptions about AgriLife Extension by Primary Occupation of Northeast Texas Farmers* (N = 112)

Primary Occupation	*N*	*M*	*SD*	*t*	*p*
Farming	45	4.02	.62	2.24	.03
Other	67	4.25	.47		

Note. Scale, 1=strongly disagree; 2=disagree; 3=neither agree nor disagree; 4=agree; 5=strongly agree.

A statistically and practically significant difference was found to exist in farmer perceptions about AgriLife Extension based upon gender (Table 36). Female farmers tended to "Strongly Agree" to statements about AgriLife Extension while male farmers tended to "Agree" to statements about AgriLife Extension. Female farmers reported higher (p < .05, two tailed) (M = 4.53, SD = .51) scores for AgriLife Extension than male farmers (M = 4.12, SD = .58).

Table 36. *Perceptions about AgriLife Extension by Gender of Northeast Texas Farmers* (*N* = 130)

Gender	*N*	*M*	*SD*	*t*	*p*
Male	113	4.12	.58	2.79	.01
Female	17	4.53	.51		

Note. Scale, 1=strongly disagree; 2=disagree; 3=neither agree nor disagree; 4=agree; 5=strongly agree.

"Other Electronic Devices Used" was also found to have a significant effect ($p < .05$) on Perceptions about AgriLife Extension among farmers participating in the study. Table 37 presents the findings related to the use of other electronic devices and perceptions about AgriLife Extension. However, because of the low number of farmers using either an Ipad or other notepad computing device plus a GPS unit, post hoc analysis to determine where the differences exist was not possible.

Table 37. *Perceptions about AgriLife Extension by Other Electronic Devices Used by Northeast Texas Farmers* (*N* = 126)

Other Electronic Devices Used	*n*	*M*	*SD*	*F*	*p*
I use no other electronic device	81	4.16	.56	3.21	.01
Smart Phone	21	4.33	.48		
Ipad or other notepad computing device	7	3.86	.90		
GPS	8	4.25	.46		
Smart Phone + GPS	4	4.25	.50		

Table 37. *Continued*

Other Electronic Devices Used	*n*	*M*	*SD*	*F*	*p*
Ipad or other notepad computing device + GPS	1	2.00			
Smart Phone + Ipad or other notepad computing device + GPS	4	4.25	.50		

Note. Scale, 1=strongly disagree; 2=disagree; 3=neither agree nor disagree; 4=agree; 5=strongly agree.

To describe the relationship between Perceptions about the website *eXtension* and selected personal characteristics, (Innovativeness Category; Primary Occupation; Value of Farm Sales in 2010; Gender; Ethnicity; Spanish, Hispanic or Latino Origin; Age; Farm Size; Years Farming; Highest Level of Education Attained; Internet Connection Type; and Other Electronic Devices Used), a linear regression using the stepwise method was constructed. The analysis resulted in no personal characteristics being entered into the equation. During post hoc analysis, no significant interactions were discovered between Perceptions about the website *eXtension* and personal characteristics.

A statistically and practically significant difference was found to exist in farmer satisfaction with the quality of agriculture related materials and programs offered by the Texas AgriLife Extension Service based upon Innovativeness Category. “Innovators” reported being “Very Satisfied” with the quality of materials and programs, while “Early Adopters”, “Early Majority” and “Late Majority” farmers reported being “Satisfied”. Farmers in the “Laggard” category were “Somewhat Satisfied” with the quality of materials and programs (Table 38). Due to a lack of variance among “Innovators”,

Levene's Statistic was applied to the data and found to be significant ($p < .05$). Therefore, the following results related to "Innovators" remain suspect.

"Innovators" were statistically and practically more satisfied ($M = 7.00$, $SD = .00$) ($p < .05$) than "Laggards" ($M = 5.40$, $SD = 1.17$). "Early Adopters" were also statistically and practically more satisfied (M = 6.44, SD = .629) ($p < .05$) than "Laggards".

Table 38. *Satisfaction with the Quality of Agriculture Related Materials and Programs Offered by the Texas AgriLife Extension Service by Innovativeness Category of Northeast Texas Farmers* ($N = 93$)

Innovativeness Score	*n*	*M*	*SD*	*F*	*p*
Innovators	3	7.00^{ac}	.00	4.33	<.01
Early Adopters	16	6.44^{ac}	.63		
Early Majority	31	6.13^{abc}	.72		
Late Majority	33	6.09^{abc}	.63		
Laggards	10	5.40^{b}	1.17		

Note. Scale, 1=very dissatisfied; 2=dissatisfied; 3=somewhat dissatisfied; 4=neither satisfied nor dissatisfied; 5=somewhat satisfied; 6=satisfied; 7=very satisfied. Means with different superscripts are statistically significant at $p < .05$.

A statistically and practically significant difference was found to exist in farmer likelihood to recommend the agriculture and natural resources materials and programs of the Texas AgriLife Extension Service to others based upon Innovativeness Category. "Innovators" reported being "Very Likely" to recommend AgriLife Extension to others,

while “Early Adopters”, “Early Majority” and “Late Majority” farmers reported being “Likely”. Farmers in the “Laggard” category were “Somewhat Likely” to recommend AgriLife Extension to others (Table 39). Due to a lack of variance among “Innovators”, Levene’s Statistic was applied to the data and found to be significant ($p < .05$). Therefore, the following results related to “Innovators” remain suspect.

“Innovators” were statistically and practically more likely to recommend AgriLife Extension to others ($M = 7.00$, $SD = .00$) ($p < .05$) than “Laggards” ($M = 5.00$, $SD = 1.63$).

“Early Adopters” ($M = 6.44$, $SD = .63$) and “Early Majority” farmers ($M = 6.42$, $SD = .56$) were also statistically and practically more likely to recommend AgriLife Extension to others ($p < .05$) than “Laggards”.

Table 39. *Likelihood of Recommending the Agriculture and Natural Resources Materials and Programs Offered by the Texas AgriLife Extension Service to Others by Innovativeness Category of Northeast Texas Farmers* ($N = 93$)

Innovativeness Category	*n*	*M*	*SD*	*F*	*p*
Innovators	3	7.00^{ab}	.00	4.33	<.01
Early Adopters	16	6.44^{ab}	.63		
Early Majority	31	6.42^{ab}	.56		
Late Majority	33	5.97^{bc}	1.19		
Laggards	10	5.00^{c}	1.63		

Note. Scale, 1=very unlikely; 2=unlikely; 3=somewhat unlikely; 4=undecided; 5=somewhat likely; 6=likely; 7=very likely. Means with different superscripts are statistically significant at $p < .05$.

A statistically but not practically significant difference was found to exist in farmer likelihood to recommend the agriculture and natural resources materials and programs offered by the Texas AgriLife Extension Service to others based upon Primary Occupation (Table 40). Farmers reporting their primary occupation as "Other" (M = 6.28, SD = .90) were statistically ($p < .05$) more likely to recommend AgriLife Extension to others than farmers reporting their primary occupation as "Farming" (M = 5.65, SD = 1.43); however, in practical application both groups reported being "Likely" to recommend AgriLife Extension to others.

Table 40. *Likelihood of Recommending the Agriculture and Natural Resources Materials and Programs Offered by the Texas AgriLife Extension Service to Others by Primary Occupation of Northeast Texas Farmers* (N = 113)

Primary Occupation	*N*	*M*	*SD*	*t*	*p*
Farming	46	5.65	1.43	2.88	.01
Other	67	6.28	.90		

Note. Scale, 1=very unlikely; 2=unlikely; 3=somewhat unlikely; 4=undecided; 5=somewhat likely; 6=likely; 7=very likely.

"Other Electronic Devices Used" was also found to have a significant effect ($p < .05$) on the likelihood of recommending the agriculture and natural resource materials and programs of the Texas AgriLife Extension Service to others. Table 41 presents the findings related to the use of other electronic devices and the likelihood of recommending AgriLife Extension to others. However, because of the low number of

farmers using either an Ipad or other notepad computing device plus a GPS unit, post hoc analysis to determine where the differences exist was not possible.

Table 41. *Likelihood of Recommending the Agriculture and Natural Resources Materials and Programs Offered by the Texas AgriLife Extension Service to Others by Other Electronic Devices Used by Northeast Texas Farmers* (*N* = 125)

Other Electronic Devices Used	*n*	*M*	*SD*	*F*	*p*
I use no other electronic device	80	5.94	1.25	2.59	.02
Smart Phone	21	6.48	.75		
Ipad or other notepad computing device	7	4.86	2.73		
GPS	8	6.25	.46		
Smart Phone + GPS	4	6.25	.96		
Ipad or other notepad computing device + GPS	1	3.00	.00		
Smart Phone + Ipad or other notepad computing device + GPS	4	6.25	.50		

Note. Scale, 1=very unlikely; 2=unlikely; 3=somewhat unlikely; 4=undecided; 5=somewhat likely; 6=likely; 7=very likely.

The conclusions, implications and recommendations for practice and research based upon these findings will be presented in Chapter V.

CHAPTER V

SUMMARY, CONCLUSIONS, IMPLICATIONS AND RECOMMENDATIONS

This chapter is intended to summarize the study through dialogue related to conclusions, implications, and recommendations for future studies. The purpose of this study was to explore the preferred information sources and delivery channels for farm-related information among selected northeast Texas farmers and describe these results in a manner which might enable the Texas AgriLife Extension Service and other agriculture-focused entities to better position themselves in addressing the needs of their clientele.

This study was guided by four objectives:

1. Describe northeast Texas farmers by their preferred sources and channels for receiving farm-related information;
2. Describe northeast Texas farmers' perceptions about information provided by the Texas AgriLife Extension Service;
3. Describe northeast Texas farmers' perceptions about information provided by the national Extension website *eXtension*; and
4. Examine the relationship between northeast Texas farmers and their preferred sources and channels for receiving farm-related information.

It should be noted that the results of this study are based upon a small population of farmers in northeast Texas. Generalizing these results outside this target population should be exercised with caution.

When compared to 2007 Census of Agriculture data (USDA, 2009), respondents to this survey were representative of the overall population of farmers in the four Texas counties (Bowie, Rains, Rusk and Shelby) selected for inclusion. Female farmers comprised 13.5% of respondents and 13.2% of the population. Farmers considering their primary occupation to be "Other" than farming comprised 60.9% of responders and 60.4% of the population.

In regard to ethnicity, "White" farmers represented 96.1% of sample responders, which was 3.1% higher than 2007 Census of Agriculture data (USDA, 2009) for the population. "Black or African American" farmers comprised 1.3% of responders, which is 2.5% lower than the population. "American Indian or Alaskan Native" farmers were over-represented by less than one percent and farmers of "More than One Race" were under-represented by less than one percent. "Asian" and "Native Hawaiian or Other Pacific Islander" farmers each comprise less than one percent of farmers in the four selected counties but were not represented in the sample data. Farmers of "Spanish, Hispanic or Latino Origin" were under-represented in the sample by 1.7% when compared to 2007 Census of Agriculture data (USDA, 2009). Racial/ethnic and gender data was not available for the mailing lists used for the study. Therefore no attempt was made to stratify the sample of farmers for these variables.

In regard to age, the largest group of respondents (42%) were farmers 65 years and over and the smallest (6.5%) was farmers 44 years and younger. The greatest number of farmers (40.6%) reported farming between 50 and 179 acres. Farmers who had been farming 41 years or longer represented 30.1% of respondents. Farmers with 10

years or less framing experience represented 18.3% of respondents. Twelve percent of respondents chose the response "I would rather not say" in relation to the value of farm sales in 2010. Among farmers who did respond to the question of farm sales in 2010, 25.3% indicated they sold less than $5,000 and 14% indicated they sold more than $100,000. In relation to highest level of education attained, 21.9% indicated high school diploma, GED or less and 47.2% indicated Bachelors degree or higher. According to the 2007 Census of Agriculture (USDA, 2009), the average age of farmers in the four counties included in the study is 58.3 years and the average farm is 181 acres in size with a market value for products sold of $106,200 per farm.

The USDA (2009) reports that 59% of U.S. farms now have Internet access, with 73% of these farms having high speed (DSL, wireless, satellite, cable) access. Among counties in the study, USDA (2009) data indicate that Internet access among the farm population is lowest (48%) for Shelby County and highest (54%) for Bowie County. High speed Internet access, according to the USDA (2009), is also lowest (39%) for Shelby County and highest (54%) for Bowie County. Among responders to the study, 77.3% reported Internet access for their farm, with less than ten percent (9.7%) relying on dial up access to reach the Internet. Results from this study indicate that respondents had above average Internet access than farmers in the general population.

In addition to a computer, farmers were asked to select from a list other electronic devices they use for farm-related business. The majority (65.5%) responded "I use no other devices". Smart phones (16.9%) followed by global positioning system (GPS) units (6.1%) and Ipad or other notepad type computing device (4.7%) were the

most commonly reported other electronic devices used. These results indicate that over one-third of all respondents have adopted the use of new electronic technologies for their farm operation.

Objective 1

Describe northeast Texas farmers by their preferred sources and channels for receiving farm-related information.

Key Findings

Northeast Texas farmers reported a preference for interpersonal sources of information. The highest ranking information source on the instrument was "Other Farmers" and the second highest ranking was "AgriLife Extension Service Personnel". In fact, the top 5 overall ranking information sources in the study were all interpersonal sources, with "seminars/workshops" ranked third, "field days" fourth and "telephone/face-to-face conversations" fifth. "Agricultural newspapers" and "Farm magazines" were the most preferred print-based sources of information while "Daily or Weekly newspapers" was the least preferred. Farmers in the study were neutral as to the use of either "Television" or "Radio" as an information source for their farm.

Among electronic sources of information, "the Internet" was the only source farmers agreed was useful. The two lowest overall ranking sources of information in the study were "Apps (Applications on a Smart Phone)" and "Social Media". Farmers

"Disagreed" that these sources were useful to them in obtaining information related to their farm operation.

Conclusions

The findings in this study related to interpersonal sources of information are not surprising as preferences for these sources have been identified many times before. These findings concur with Vergot et al. (2005) who found "Other cattle producers" and "County Extension Agent" to be the two most preferred sources of information. These findings are similar to Cartmell et al. (2006) who found "Extension" as the most preferred information source and the USDA (2012) who found "local Extension office" to be the preferred information delivery channel for information related to operations management and proper care of livestock among small-scale U.S. livestock operators.

Findings in this study related to print sources of information are not surprising either. These findings are similar to Vergot et al. (2005) who found farm magazines and newspapers to be in the top five among preferred information channels. Similarly, Cartmell et al. (2006) found farm magazines second among preferred media formats.

Respondents to this study reported a lack of preference for either television or radio as an information source. This supports Cartmell et al. (2006) who found television and radio to rank low as information sources.

Despite the farmers responding to this study having above average Internet access compared to their peers, the use of the Internet as an information source did not rank that high. Overall, the Internet (websites) ranked 11 out of 30 sources. When asked

about Internet use, farmers reported using it for a variety of reasons like "finding information about products" or "finding agriculture information". Farmers "Disagreed" that they used the Internet to advertise their farm business. Other studies, Cartmell et al. (2006); Vergot et al. (2005); Jensen et al. (2009); and USDA (2012) have found farmers to rank the Internet below other preferred sources of information.

Implications

The main implication related to objective 1 is that interpersonal sources of information are very important to northeast Texas farmers. Opportunities that allow farmers to interact directly with other people (other farmers, AgriLife Extension personnel, seminars/workshops, field days, telephone/face to face conversations) were the top five overall preferred information sources in the study. In diffusion theory, Rogers (2003) states that followers will seek information and advice about innovations from opinion leaders they perceive to be more technically competent. Interpersonal settings such as the ones preferred by these farmers provide the opportunity for information to be shared between opinion leaders and followers.

Another implication related to objective 1 is that agricultural newspapers and farm magazines are also important sources of information to northeast Texas farmers. Both of these sources were rated in the top 10 by respondents. Agricultural newspapers were tied for sixth and farm magazines were rated ninth overall among the 30 information sources in the study. Mass media sources are important for individuals in the knowledge stage of an innovation (Rogers, 2003). Farmers may be utilizing these farmer

oriented media sources to gain a better understanding of a new innovation or to generally keep informed of issues impacting agriculture.

Recommendations for Practice

With the strong preference of northeast Texas farmers for interpersonal sources of information, Extension educators should focus on these opportunities for information exchange. Settings which allow farmers to interact with one another and with resource specialists (Extension agents, Extension specialist, etc.) allow farmers to share with their peers and obtain new information to use on their farm. Field days on farms where agricultural demonstrations are being conducted are especially good opportunities for information exchange and have been found to be preferred information sources before (Licht and Martin, 2007). Extension agents should also focus on one-on-one interaction with clientele. AgriLife Extension Service personnel were the second most preferred information source in the study. Licht and Martin (2007) found that producers looked to Extension to help them evaluate information gathered from other sources.

The print media sources of agricultural newspapers and farm magazines should not be overlooked by Extension educators (agents and subject matter specialists) either. These resources serve as an avenue for producers to gain additional information to use on their farm and may be valuable channels for introducing new innovations to farmers within the community.

Recommendations for Further Research

This study asked respondents whether or not an information source was useful to them in obtaining information related to their farming operation. It did not ask the important question of why a specific source was used by a respondent. Future research in this area should focus on why one source is preferred over another. Is a source used because it is trusted more? Is a source used because information from it is easier to obtain? Are there different preferred sources depending upon the type of information being sought by the farmer?

Future research in this area should also focus on why the Internet is still relatively low in ranking as a preferred information source. Farmers responding to this study, when compared to their peers, had greater access to high speed Internet and a higher percentage had Internet access for their farm. Why then, is the Internet still lagging behind other information sources? Are farmers not aware of the agricultural offerings on the world wide web, are they unsure of how to search for information online, or is there a question of trusting information found online? Equally puzzling, given the computer access among respondents, is why other avenues for electronic information transfer like email and electronic newsletters ranked so low among respondents.

Objective 2

Describe northeast Texas farmers' perceptions about information provided by the Texas AgriLife Extension Service.

Key Findings

In relation to contact with the Texas AgriLife Extension Service, some interesting findings were observed. The single most reported method for contact with Extension was reading an Extension publication "Monthly" with a frequency of 70.2%. The second most reported method of contact was a "Yearly" visit to an Extension office (61.5%). Attending an Extension meeting was a "Yearly" method of contact for 53.1% of respondents. Calling or speaking to an Extension agent was a "Yearly" method of contact for 45.7% of respondents and a "Monthly" method of contact for 37.2% of respondents.

Contact by an Extension agent visiting their farm was a "Yearly" occurrence for 40.3% of respondents but occurred "Never" for over one-half (54.3%) of respondents. Nearly one-half (46.2%) had "Never" listened to an Extension report on the radio and nearly one-half (48.1%) had "Never" watched an Extension report on television. Among respondents, 39.1% reported "Never" visiting an Extension website.

Respondents reported being "Satisfied" with the quality of agriculture related materials and programs provided by the Texas AgriLife Extension Service and were "Likely" to recommend its materials and programs to others. Respondents also "agreed" with all nine statements asked about information from Extension. In relation to information from Extension, the three highest rated statements were "information from Extension is helpful", "information from Extension is understandable" and "information from Extension is accurate".

Conclusions

In relation to contact with the Texas AgriLife Extension Service, the findings concur with Radhakrishna et al. (2003) who found "publications" to rank second among useful educational delivery methods among landowners and Howell and Habron (2004) who found "written", followed by "personal/face-to-face" communication strategies to be preferred over "media" or "computer/Internet" communication strategies. The findings in this section also concur with earlier reported neutrality on the use of radio or television as an information source for the farm among respondents.

In relation to satisfaction with AgriLife Extension, the results of this study are similar to the customer satisfaction score of 82% reported for Texas by Radhakrishna (2002). The findings from this study are also similar but slightly lower than reported customer satisfaction with Cooperative Extension in Florida (Galindo-Gonzalez & Israel, 2010).

Implications

The main implication in relation to objective 2 is that respondents use a variety of different channels for contacting the Texas AgriLife Extension Service. The most reported method of contact was reading an Extension publication "Monthly". Although the type of publication was not mentioned specifically in the instrument, since participants in this study came from existing Extension mailing lists which are often used to send out monthly or quarterly newsletters, farmers could have been reporting their frequency of reading an Extension newsletter. This finding supports Vergot et al.

(2005) who found “County Extension newsletter” to be the preferred information channel reported by Florida beef cattle producers.

The other implication in relation to objective 2 is that users of the Texas AgriLife Extension Service who responded to this survey are currently “Satisfied” with the information and services provided by the agency and were “Likely” to recommend AgriLife Extension to others. This would imply that AgriLife Extension is currently meeting the needs of the users who responded to this survey. According to Lin (1999), satisfaction obtained from media use can reinforce future use of the media.

The findings related to objective 2 support the conceptual framework for this study. Gratification received in the form of “Satisfaction” with the information and services provided by AgriLife Extension has led to repeated use of Extension as an information source among northeast Texas farmers, ranking it second among interpersonal sources of information and making farmers “Likely” to recommend Extension as an information source to others.

Recommendations for Practice

Extension newsletters are importance sources of information to clientele. Extension offices should produce and distribute to clientele a newsletter on a regular basis. A well-written newsletter that is understandable and provides accurate, research-based information to clientele will be used by clientele. Extension administration should provide local offices with adequate financial resources to enable them to develop and mail out a quality newsletter as an information channel for educating clientele.

The local Extension office is a valuable resource to farmers and serves as a focal point for interpersonal information delivery to clientele. Maintaining an office in each county should be a priority for Extension administration. The local Extension staff should strive to provide quality information to their clientele and should conduct formative evaluations with their subject area committees and summative evaluations with clientele to help ensure that educational programs are meeting their desired outcomes.

Recommendations for Further Research

Additional research should be conducted in this area to examine the Extension newsletter more closely. Characteristics of the 'preferred' Extension newsletter should be defined in more detail by prospective clientele. What is the optimal length of a newsletter? Which is preferred, a general information newsletter that discusses many topics in brief, or subject-focused newsletters that feature fewer topics in greater detail? What is the optimal distribution interval for a newsletter? What is the preferred distribution method of a newsletter (mail or electronic)? These are some potential questions about the Extension newsletter that should be examined to help Extension professionals develop a better delivery channel of information to clientele.

Objective 3

Describe northeast Texas farmers' perceptions about information provided by the national Extension website *eXtension*.

Key Findings

The main finding in relation to objective 3 is that very few respondents were aware of, or had tried using the website *eXtension*. Nearly all farmers (91.6%) reported being not familiar with *eXtension* and only four respondents reported having used *eXtension* to obtain information. The few respondents (11) who offered their perceptions about *eXtension* "Agreed" that it "increases the accessibility of Extension programming" and "should be publicized more by local Cooperative Extension offices".

Conclusions

The main conclusion in relation to objective 3 is that most respondents were unaware of the existence of the website *eXtension*. The low rate of awareness about *eXtension* could indicate that many farmers are still at the 'Knowledge Stage' of the Innovation-Decision process which, according to Rogers, "commences when an individual is exposed to an innovation's existence and gains an understanding of how it functions" (2003, p. 171).

Implications

The main implication based upon the results of this study is that the national website *eXtension* has yet to be widely adopted as an information source among northeast Texas farmers. The website was launched in 2008 and has been available as a resource for farmers for four years, yet even awareness of its existence among this group of farmers was extremely low. It is not known if the adoption rate of *eXtension* among

farmers in northeast Texas is above or below the state or national average because little research has been conducted to date about its adoption. When contacted about *eXtension*'s adoption among farmers, Mike Lambur, *eXtension* Evaluation and Research Leader (personal communication, June 6, 2011), responded that he was, "not aware of any studies conducted to investigate the adoption of *eXtension* among the farming community."

Recommendations for Practice

Extension agents should promote *eXtension* with their clientele as an information source to increase awareness. Inclusion of information obtained from *eXtension* in Extension newsletters and mention of the website in other mass media efforts could increase awareness of the resource in the farming community and could eventually lead to increased adoption. Texas AgriLife Extension Service county office web sites, which are provided as a template through AgriLife Information Technology, should provide a link to *eXtension* in a prominent location to facilitate its access and increase awareness of the site among visitors to county web sites.

Recommendations for Further Research

The adoption of *eXtension* among Extension agents should be examined further. When *eXtension* was first launched, Harder and Lindner (2008) found that county agents in Texas had little to no knowledge of the website. More recently Kelsey, Stafne and Greer (2011) found the adoption rate of *eXtension* to only be at 49% among Extension

employees in Oklahoma. Until Extension employees become active users of *eXtension*, it is unlikely they will promote the website widely within their communities of service.

Researchers should also examine any potential barriers that might exist among Extension agents which are preventing them from informing their clientele about *eXtension*. Are Extension agents not promoting *eXtension* to their clientele because they are concerned about losing office business to the website? Results of this study indicated that respondents "neither agreed nor disagreed" with the statement "*eXtension* will make the local Extension office less important in the future". Are Extension agents unsure of how to use *eXtension* to find answers to questions themselves? Is training in how to use *eXtension* as an information source needed for Extension agents?

Objective 4

Examine the relationship between northeast Texas farmers and their preferred sources and channels for receiving farm-related information.

Key Findings

A linear relationship was constructed using the stepwise method that helped predict Internet Use based upon three variables – Internet Connection Type, Other Electronic Devices Used and Age. These three variables plus the constant explained 32.4% of the variance in Internet Use among northeast Texas farmers participating in this study.

Post hoc analysis of the data yielded several findings among farmer Internet Use based upon certain personal characteristics – Age, Highest Level of Education Attained, Internet Connection Type and Other Electronic Devices Used. Farmers responding to the study age 54 or younger reported higher levels of Internet Use than older farmers. Farmers in the 75 and older age group reported the least amount of Internet Use. In relation to Highest Level of Education Attained, famers with the lowest educational level (High School diploma GED or lower) reported the lowest Internet Use score. The highest users of the Internet were farmers with Bachelors degrees followed by farmers with Associates degrees. In relation to Internet Connection Type, farmers without Internet access reported the lowest level of Internet Use. Farmers with DSL Internet connections reported the highest level of Internet Use. Other Electronic Devices Used was also found to effect Internet Use, but post hoc analysis was not possible because of low numbers in some device combinations.

A linear relationship was constructed using the stepwise method that helped predict Perceptions about AgriLife Extension based upon three variables – Innovativeness Category, Other Electronic Devices Used and Gender. These three variables plus the constant explained 35.7% of the variance in Perceptions about AgriLife Extension among northeast Texas farmers participating in the study.

Post hoc analysis of the data yielded several findings in relation to Perceptions about AgriLife Extension based upon certain personal characteristics – Innovativeness Category, Primary Occupation, Gender, and Other Electronic Devices Used. Innovativeness Category was perfectly aligned with farmer perceptions about AgriLife

Extension, with perception scores decreasing as one moved from Innovator to Laggard. Although not practically significant, farmers who listed their primary occupation as "Other" reported a statistically significantly higher score for perceptions about AgriLife Extension than farmers with a primary occupation of "Farming". Female farmers reported statistically and practically higher scores for perceptions about AgriLife Extension than male farmers. Other Electronic Devices Used was also found to effect perceptions about AgriLife Extension, but post hoc analysis was not possible because of low numbers in some device combinations.

Innovativeness Category was also found to be perfectly aligned with farmer satisfaction with the quality of agriculture related materials and programs offered by the Texas AgriLife Extension Service and with the likelihood to recommend the agriculture and natural resources materials and programs of the Texas AgriLife Extension Service to others. Innovators were "Very Satisfied" with the quality of materials and programs and "Very Likely to recommend AgriLife Extension to others. Early Adopters, Early Majority and Late Majority farmers were "Satisfied" with the quality of materials and programs and were "Likely" to recommend AgriLife Extension to others. Laggards were only "Somewhat Satisfied" with the quality of materials and programs and "Somewhat Likely" to recommend AgriLife Extension to others.

Conclusions

Conclusions that can be drawn in relation to Internet Use are that certain personal characteristics influence Internet use in northeast Texas farmers. Older farmers, farmers

with lower educational levels and farmers without Internet connections for their farm are less likely to use the Internet than their peers. Findings related to age support findings from the Pew Research Center (2009) which found that older Americans were less likely to use the Internet than younger Americans. Farmers with DSL connections reported the highest level of Internet use which may correspond to the fact that faster Internet connection speeds facilitate ease of Internet use through less down time waiting for pages and content to download. Nearly a quarter of respondents (22.9%) reported not having Internet access for their farm. According to USDA (2011) estimates, approximately 42% of Texas farmers still do not have Internet access, therefore farmers responding to this study as a group seemed to be better connected to the Internet than their peers statewide. The Use of Other Electronic Devices also appeared to influence Internet usage. Although the low response rates to some other device combinations prevented post hoc analysis to determine where differences exist, most users of other devices reported higher Internet usage than farmers who did not use other devices. The Pew Research Center (2009) reported that "mobile and wireline access tools have a symbiotic relationship". "Mobile users typically have ready access to high-speed connections at home, which likely pushes them toward deeper home high-speed use", Pew (2009) states, "at the same time, the desktop Internet experience migrates to 'on the go' as the handheld becomes a complimentary access point to connect with people and digital content wherever a wireless network reaches."

Certain personal characteristics effect how farmers felt about AgriLife Extension. A farmer's Innovativeness Category had an effect on their Perceptions about AgriLife

Extension, Satisfaction with AgriLife Extension and Likelihood of Recommending AgriLife Extension to others. Innovators scored higher than the other four Innovativeness Categories (Early Adopters, Early Majority, Late Majority and Laggards) in all three of these areas. Laggards scored lowest in all three of these areas. Findings related to Innovativeness Category and their feelings about AgriLife Extension support Rogers who states that, "early adopters have more contact with change agents than do later adopters" (2003, p. 291). One finding, not expected, was that female farmers reported higher perceptions about AgriLife Extension than male farmers. Bardon et al. (2007) did not find any differences based on gender in their study of North Carolina Forest Landowners.

Implications

One implication of the findings in relation to Internet Use is that information provided only via the Internet may be missed by many farmers. Older farmers, farmers with lower education levels and farmers without Internet access will be less likely to view such information as their younger, better educated Internet equipped peers. Farmers without Internet access are essentially on the other side of the 'digital divide' from their connected peers.

Farmers responding to the survey were generally satisfied with AgriLife Extension and would recommend the agency to others. This finding indicates that farmers place value in AgriLife Extension as an information source. This finding, in conjunction with the high rating for AgriLife Extension personnel as an information

source supports the Uses and Gratifications Theory and the conceptual model for this study in that gratification obtained from a media source reinforces future use (Lin, 1999).

Recommendations for Practice

Extension educators should remember that not all of their clientele are equally connected to the Internet. Marketing efforts for programs and educational materials available only online are not being accessed by all potential clientele. Programs targeting older clientele should be marketed using other methods in addition to the Internet to increase the likelihood of them being seen by this group. The Pew Research Center (2012) found that, "adults with less than a high school education", were less likely to have Internet access (p. 2). Although not directly addressed in this study, farmers with a High School diploma, GED or lower were less likely to use the Internet, which may indicate that this group of farmers has lower Internet access than their peers.

Extension should consider developing applications for smart phones and other related mobile devices that will facilitate use of Extension provided educational resources by farmers who are using these devices on their farm operation.

Extension educators should continue to focus on seeking out the more innovative members of the farming community when attempting to introduce a new innovation. These farmers, Innovators and Early Adopters, scored high in their perceptions about AgriLife Extension and their likelihood of recommending the agency to others. These earlier categories, especially the Early Adopters are critical, according to Rogers (2003)

to getting new ideas adopted in the community. According to Dillman, Engle, Long & Lamiman (1989) early adopters serve as "extenders" of Extension information to others.

Recommendations for Further Research

The phenomenon of Internet Use among farmers should continue to be examined in future research. As current farmers age, trends in Internet Use among older farmers may change. Changes in Internet availability due to possible reductions in cost, development of new technologies or increased availability in rural areas may also impact future Internet Use among farmers.

This study asked farmers what other electronic devices they were using on their farm and one-third (35%) reported they were using an electronic device in addition to a computer on their farm. More research into this area is warranted to learn more about how these devices are being put to use on the farm.

Findings related to perceptions about AgriLife Extension and primary occupation and gender should be explored further. Are these findings specific to the study at hand or are these indicative of trends being observed elsewhere? Why do part time and female farmers have higher perceptions about Extension than the more traditional full time male farmer? Is Extension no longer meeting the needs of traditional clientele or does this less traditional group rely more on Extension than their counterparts?

Summary of Recommendations for Practice

Extension educators should focus on interpersonal opportunities for information exchange. Settings which allow farmers to interact with one another and with resource specialists (Extension agents, Extension specialist, etc.) allow farmers to share with their peers and obtain new information to use on their farm. Field days on farms where agricultural demonstrations are being conducted are especially good opportunities for information exchange. Extension agents should also focus on one-on-one interaction with clientele as AgriLife Extension Service personnel were the second most preferred information source in this study.

Agricultural newspapers and farm magazines serve as an avenue for producers to gain additional information to use on their farm and may be valuable channels for introducing new innovations to farmers within the community.

Extension newsletters are importance sources of information to clientele. Extension offices should produce and distribute a newsletter on a regular basis. A well-written newsletter that is understandable and provides accurate, research-based information will be used by clientele. Extension administration should provide local offices with adequate financial resources to enable them to develop and mail out a quality newsletter.

The local Extension office is a valuable resource to farmers and serves as a focal point for interpersonal information delivery to clientele. Maintaining an office in each county should be a priority for Extension administration. The local Extension staff should strive to provide quality information to their clientele and should conduct

formative evaluations with their subject area committees and summative evaluations with clientele to help ensure that educational programs are meeting their desired outcomes.

Extension agents should promote *eXtension* with their clientele as an information source. Inclusion of information from *eXtension* in Extension newsletters and mention of the website in other media efforts could increase awareness of the resource in the farming community and could lead to increased adoption. Texas AgriLife Extension Service county office websites should provide a link to *eXtension* in a prominent location to facilitate access and increase awareness of the site among visitors.

Extension educators should remember that not all of their clientele are equally connected to the Internet. Marketing efforts for programs and educational materials available only online are not being accessed by all potential clientele. Programs targeting older clientele should be marketed using other methods in addition to the Internet to increase the likelihood of them being seen by this group.

Extension should consider developing applications for smart phones and other mobile devices to facilitate the use of Extension educational resources by farmers who are already using these devices on their farm.

Extension educators should continue to focus on seeking out the more innovative members of the farming community when attempting to introduce a new innovation. Innovators and Early Adopters scored high in their perceptions about AgriLife Extension and their likelihood of recommending the agency to others. Early Adopters are looked to by others in the community when making farm decisions and their support of

demonstrations and field days is a very valuable resource which should not be overlooked by the Extension educator.

Summary of Recommendations for Further Research

This study did not ask the important question of why a specific information source was used by a respondent. Future research in this area should focus on why one source is preferred over another. Is a source used because it is trusted more? Is a source used because information from it is easier to obtain? Are there different preferred sources depending upon the type of information being sought by the farmer?

Future research should focus on why the Internet is still relatively low in ranking as a preferred information source. Farmers responding to this study, when compared to their peers, had greater access to high speed Internet and a higher percentage had Internet access for their farm. Why then, is the Internet still lagging behind other information sources? Are farmers not aware of the agricultural offerings on the world wide web? Are farmers unsure of how to search for information online? Is there a question of trusting information found online?

Additional research should be conducted to examine the Extension newsletter more closely. Characteristics of the 'preferred' newsletter should be defined in more detail by prospective clientele. What is the optimal length of a newsletter? Which is preferred, a general newsletter that discusses many topics in brief, or a more-focused newsletter that features fewer topics in greater detail? What is the optimal distribution

interval for a newsletter? What is the preferred distribution option for a newsletter (mail or electronic)?

The adoption of *e*Xtension among Extension agents should be examined further. Until Extension employees become active users of *e*Xtension, it is unlikely they will promote the website to their clientele. Barriers that might exist which are preventing agents from informing their clientele about this website should also be examined. Is training in how to use *e*Xtension as an information source needed for Extension agents?

The phenomenon of Internet Use among farmers should continue to be examined in future research. As current farmers age, trends in Internet Use among older farmers may change. Changes in Internet availability due to possible reductions in cost, development of new technologies or increased availability in rural areas may also impact future Internet Use among farmers.

Findings in this study related to perceptions about AgriLife Extension and primary occupation and gender should be explored further. Are these findings specific to the study at hand or are these indicative of trends being observed elsewhere? Why do part time and female farmers have higher perceptions about Extension than the more traditional full time male farmer? Is Extension no longer meeting the needs of traditional clientele or does this group simply rely more on Extension than their counterparts?

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APPENDIX A

TEXAS A&M UNIVERSITY
College of Agriculture and Life Sciences
Department of Agricultural Leadership, Education, and Communications

2116 TAMU
College Station, TX 77843-2116

Brian L. Triplett
710 James Bowie Drive
New Boston, Texas 75570
903-748-2343

«First_Name» «Last_Name»
«Address»
«City», Texas «Zip»

Dear «First_Name» «Last_Name»:

Farming has always been an integral and ever changing part of the American landscape. The United States has around 2.2 million farmers who daily tackle the task of feeding an ever growing population dependent upon them for the food in their cabinet, the clothes on their back and the home they sleep in every night.

This past year, as we are all aware, has been particularly tough on Texas farmers. Everyone has had to make difficult management decisions, from selling off livestock to purchasing less familiar feed stuffs to feed their herds through these difficult times.

Where farmers turn when seeking information related to farm-related questions is an area of interest to Texas A&M University's department of Agricultural Leadership, Education, and Communications (ALEC). Today's farmers have volumes of information available at their fingertips.

You are receiving this letter because you have been selected as one of only 300 farmers in four selected Northeast Texas counties to participate in a short study concerning farmers and their preferred information sources. Your responses to these questions will be vital to us as we attempt to learn more about where the Texas farmer turns to find their information.

In a few days you will receive a second letter in the mail which will provide you with instructions on how you can provide us with your information gathering preferences. Your responses to the survey will remain anonymous and you may choose not to answer all of the questions on the survey instrument. In exchange for your time and information, you will be entered into a drawing to win 1 of 2 gift cards.

Sincerely,

Brian L. Triplett, MS
Graduate Student – Texas A&M University

Phone (979) 845-2951 FAX (979) 845-6296 http://alec.tamu.edu

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Brian L. Triplett
710 James Bowie Drive
New Boston, Texas 75570
903-748-2343

«First_Name» «Last_Name»
«Address»
«City», Texas «Zip»

Dear «First_Name» «Last_Name»:

As promised in my earlier correspondence, this letter contains information on how you can provide your information and experience to our study on the Preferred Information Sources and Channels of Northeast Texas Farmers. You are among a select group of around 300 farmers in four Northeast Texas counties who are being contacted to provide input for this study which could have implications for universities and other groups across Texas who would like to know the best way to reach the most farmers with vital information in the shortest amount of time.

Included with this letter is an Information Sheet about this study provided by Texas A&M University. There are minimal risks associated with participating in this study and at no time will your name be associated with your responses to the survey instrument. Our hope is that you would prefer to complete this survey instrument online, but if not, we have provided you with a printed copy of the instrument as well as a self-addressed and stamped envelope for ease of return.

Your identification code survey for the survey is «ID_Code». This 5 digit code is already written for you on your return envelope. If you would like to complete the survey online, you will be asked to enter this code at the start of the instrument. Please complete the survey only one time. Your identification code will only be used to help us follow up with people who do not initially reply to this survey request and to contact the 2 winners of the gift cards (which will be drawn from survey responders). The link to access the online instrument is: **http://tamuag.qualtrics.com/SE/?SID=SV_beGDa57Y5CWTmBK**

It is estimated that it should only take about 20 minutes to complete the survey. Your 20 minute investment however, will save hours of future effort by those who have vital information they need to get into the hands of farmers in the most effective and efficient way.

Sincerely,

Brian L. Triplett, MS
Graduate Student – Texas A&M University

Phone (979) 845-2951 FAX (979) 845-6296 http://alec.tamu.edu

TEXAS A&M UNIVERSITY HUMAN SUBJECTS PROTECTION PROGRAM

INFORMATION SHEET

Project Title: Preferred Information Sources and Channels of Northeast Texas Farmers

You are being invited to take part in a research study being conducted by Texas A&M University and are asked to read this form so that you will know about this research study. The information in this form is provided to help you decide whether or not to take part. You will consent to being a part of this study by completing and returning the survey instrument.

The purpose of this study is to learn more about where farmers in Texas seek the information necessary to help them make farm-related decisions. You are being asked to be in this study because you are a farmer in Northeast Texas. Approximately 600 farmers from four different northeast Texas counties (Bowie, Rusk, Shelby and Rains) are being asked to participate in this study. The alternative to participating in this study is not to participate.

Your participation in this study will last between 20 and 30 minutes. You will be asked to go to a web site and complete a survey instrument about your preferred information sources for obtaining farm-related information. If you prefer, you may complete the paper copy of the survey instrument and return it in the self-addressed, postage page envelope enclosed.

The things that you will be doing have no more risk than you would come across in everyday life. You will only be asked to complete a survey instrument in the privacy of your own home. Your name will not be associated with the data, only your individual participant code will be associated with the data. This code will be removed from the data prior to data analysis. There will be no direct benefit to you by being in this study. Aside from your time, there are no costs for taking part in the study.

Upon completion of the survey, your participant code will be entered into a drawing for one of two gift cards. The drawing will be held once data collection has concluded. Your odds of winning one of the gift cards depend upon the number of responses to the study.

The records of this study will be kept private. No identifiers linking you to this study will be included in any sort of report that might be published. Research records will be stored securely and only Brian Triplett or James Lindner will have access to the records. Information about you will be stored in locked file cabinet or secure file.

Information about you will be kept confidential to the extent permitted or required by law. People who have access to your information include the Principal Investigator and research study personnel. Representatives of regulatory agencies such as the Office of Human Research Protections (OHRP) and entities such as the Texas A&M University Human Subjects Protection Program may access your records to make sure the study is being run correctly and that information is collected properly.

You can contact the Principal Investigator to tell him about a concern or complaint about this research study. The Principal Investigator Brian L. Triplett, MS can be called at 903-748-2343 or emailed at b-triplett@tamu.edu. You may also contact the Principal Investigator's advisor, James R. Lindner, PhD at 979-458-2701 or j-lindner@tamu.edu.

For questions about your rights as a research subject; or if you have questions, complaints, or concerns about the research and cannot reach the Principal Investigator or want to talk to someone other than the Investigator, you may contact the Texas A&M Human Subjects Protection Program office at (979) 458-4067 or irb@tamu.edu

You have the choice whether or not to be in this research study. You may decide to not begin or to stop the study at any time. If you choose not to be in this study, there will be no effect on you. You can stop being in this study at any time with no effect on you either. By participating in the survey, you are giving permission for the investigator to use your information for research purposes.

Thank you.

Brian L. Triplett, MS

Version Date: 11/16/2011 Page 1 of 1

Texas A&M University	**IRB Exempt**
IRB Protocol # 2011-0949	**Authorized by:** GW

Dear Northeast Texas Farmer:

For some reason we have not yet received your reply to our survey on the Preferred Information Sources of Northeast Texas farmers.

If you have already replied, please accept our apology for this notice, perhaps these letters passed each other in the mail.

If you need a new copy of the survey mailed to you, have lost your survey identification number or have unanswered questions keeping you from completing the survey, please call me at 903-748-2343 or send me an email at b-triplett@tamu.edu.

Please respond to the survey soon to ensure your number goes into the drawing for 1 of 2 gift cards.

Sincerely, Brian Triplett, MS

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Sincerely, Brian Triplett, MS

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Department of Agricultural Leadership, Education, and Communications

2116 TAMU
College Station, TX 77843-2116

Brian L. Triplett
710 James Bowie Drive
New Boston, Texas 75570
903-748-2343

February 13, 2012

[Name]
[Address]
[Address]

Dear [Name]:

We understand that there are only so many hours in the day and many tasks to get accomplished. In your daily quest to complete all your projects, you have likely set our earlier request to participate in our study aside with the intent to complete it at a later date.

We value your opinion and the information you provide will help us gain a better picture of where farmers like you are turning for answers to their farm-related questions. You are among a select group of around 600 farmers in four Northeast Texas counties who are being contacted to provide input for this study which could have implications for universities and other groups across Texas who would like to know the best way to reach the most farmers with vital information in the shortest amount of time.

In case you misplaced the earlier letter, included is an Information Sheet about this study provided by Texas A&M University. There are minimal risks associated with participating in this study and at no time will your name be associated with your responses to the survey instrument. Our hope is that you would prefer to complete this survey instrument online, but if not, we have provided you with a replacement printed copy of the instrument as well as a self-addressed and stamped envelope for ease of return.

Your identification code survey is [identification code]. Please write this 4 digit code on the hard copy of the survey if you are completing it on paper, or be prepared to enter this code if you complete the survey online. Please complete the survey only one time, either online or on paper. Your identification code will only be used contact the 2 winners of the gift cards. The link to access the online instrument and complete the survey is **http://tamuag.qualtrics.com/SE/?SID=SV_beGDa57Y5CWTmBK**

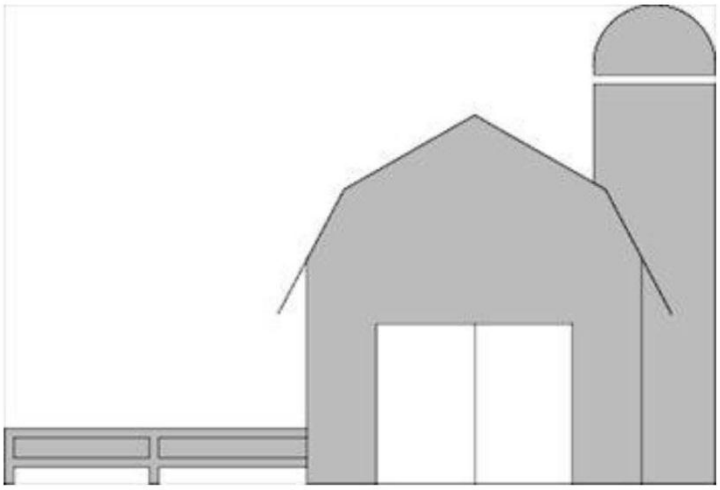
Sincerely,

Brian L. Triplett, MS

Phone (979) 845-2951 FAX (979) 845-6296 http://alec.tamu.edu

APPENDIX B

Preferred Information Sources and Channels of Northeast Texas Farmers



A Questionnaire

AGRICULTURE & LIFE SCIENCES
TEXAS A&M UNIVERSITY

Q 1) Please use the scale below to indicate your level of agreement with the following statements about potential farm related information sources (please circle only one number per line).	Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree
Family/Friends are useful to me in obtaining information related to my farming operation.	1	2	3	4	5
Other Farmers are useful to me in obtaining information related to my farming operation.	1	2	3	4	5
Private Consultants (paid) are useful to me in obtaining information related to my farming operation.	1	2	3	4	5
Feed/Chemical Company personnel are useful to me in obtaining information related to my farming operation.	1	2	3	4	5
Agricultural Lenders/Bankers are useful to me in obtaining information related to my farming operation.	1	2	3	4	5
My Local Veterinarian is useful to me in obtaining information related to my farming operation.	1	2	3	4	5
Farm Service Agency personnel are useful to me in obtaining information related to my farming operation.	1	2	3	4	5
Breed or Commodity Organization personnel are useful to me in obtaining information related to my farming operation.	1	2	3	4	5
Natural Resources Conservation Service personnel are useful to me in obtaining information related to my farming operation.	1	2	3	4	5
AgriLife Extension Service personnel are useful to me in obtaining information related to my farming operation.	1	2	3	4	5

Q 2) Please use the scale below to indicate your level of agreement with the following statements about potential farm related information sources (please circle only one number per line).	Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree
Farm Magazines are useful to me in obtaining information related to my farming operation.	1	2	3	4	5
Agricultural Newspapers are useful to me in obtaining information related to my farming operation.	1	2	3	4	5
Daily or Weekly Newspapers are useful to me in obtaining information related to my farming operation.	1	2	3	4	5
Commercial Publications (e.g. seed and Ag product catalogs) are useful to me in obtaining information related to my farming operation.	1	2	3	4	5
Government Publications (e.g. reports, fact sheets, bulletins) are useful to me in obtaining information related to my farming operation.	1	2	3	4	5
Books are useful to me in obtaining information related to my farming operation.	1	2	3	4	5
Publications from Non-governmental Farm Organizations (e.g. Noble Foundation) are useful to me in obtaining information related to my farming operation.	1	2	3	4	5

Continue on Next Page

Q 3) Please use the scale below to indicate your level of agreement with the following statements about potential farm related information sources (please circle only one number per line).	Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree
Television is useful to me in obtaining information related to my farming operation.	1	2	3	4	5
Radio is useful to me in obtaining information related to my farming operation.	1	2	3	4	5
Video/CD/DVDs are useful to me in obtaining information related to my farming operation.	1	2	3	4	5
Electronic Newsletters are useful to me in obtaining information related to my farming operation.	1	2	3	4	5
Subscriptions to a Professional Service (e.g. DTN) are useful to me in obtaining information related to my farming operation.	1	2	3	4	5
Seminars/Workshops are useful to me in obtaining information related to my farming operation.	1	2	3	4	5
Field Days are useful to me in obtaining information related to my farming operation.	1	2	3	4	5
Telephone/Face to Face Conversations are useful to me in obtaining information related to my farming operation.	1	2	3	4	5

Q 4) Please use the scale below to indicate your level of agreement with the following statements about potential farm related information sources (please circle only one number per line).	Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree
The Internet (websites) are useful to me in obtaining information related to my farming operation.	1	2	3	4	5
E-mail is useful to me in obtaining information related to my farming operation.	1	2	3	4	5
Blogs (web-logs) are useful to me in obtaining information related to my farming operation.	1	2	3	4	5
Social Media (e.g. Facebook, Twitter) is useful to me in obtaining information related to my farming operation.	1	2	3	4	5
Apps (Applications on a Smart Phone) are useful to me in obtaining information related to my farming operation.	1	2	3	4	5

Continue on Next Page

Q 5) Please use the scale below to indicate your level of agreement with the following statements about Internet usage (please circle only one number per line).	Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree
I use the Internet to find information about products.	1	2	3	4	5
I use the Internet to find directions to places I travel.	1	2	3	4	5
I use the Internet to obtain news information.	1	2	3	4	5
I use the Internet to find agriculture information.	1	2	3	4	5
I use the Internet for e-mail.	1	2	3	4	5
I use the Internet to share photographs with others.	1	2	3	4	5
I use the Internet to check livestock or commodity reports.	1	2	3	4	5
I use the Internet to purchase items.	1	2	3	4	5
I use the Internet for banking purposes.	1	2	3	4	5
I use the Internet to advertise my farm business.	1	2	3	4	5

Q 6) Are you familiar with the programs and services of the Texas AgriLife Extension Service (please fill in one circle)?

O Yes O No **(skip to question 11)**

Q 7) Please indicate how often you have contact with the Texas AgriLife Extension Service (please circle only one number per line).	Never	Weekly	Monthly	Yearly
Read an Extension publication.	1	2	3	4
Visited an Extension web site.	1	2	3	4
Visited an Extension office.	1	2	3	4
Called or Spoken to an Extension agent.	1	2	3	4
Attended an Extension meeting.	1	2	3	4
An Extension Agent visited my farm.	1	2	3	4
Listened to an Extension report on the radio.	1	2	3	4
Watched an Extension report on television.	1	2	3	4

Continue on Next Page

Q 8) Overall how satisfied are you with the quality of agriculture related materials and programs provided by the Texas AgriLife Extension Service over the past two years?	Very Dissatisfied	Dissatisfied	Somewhat Dissatisfied	Neither Satisfied Nor Dissatisfied	Somewhat Satisfied	Satisfied	Very Satisfied
Please circle only one response	1	2	3	4	5	6	7

Q 9) How likely are you to recommend the agriculture and natural resources materials and programs of the Texas AgriLife Extension Service to others?	Very Unlikely	Unlikely	Somewhat Unlikely	Undecided	Somewhat Likely	Likely	Very Likely
Please circle only one response	1	2	3	4	5	6	7

Q 10) Please use the scale below to indicate your level of agreement with the following statements about the Texas AgriLife Extension Service (please circle only one number per line).	Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree
Information from Extension is accurate.	1	2	3	4	5
Information from Extension is timely.	1	2	3	4	5
Information from Extension is relevant.	1	2	3	4	5
Information from Extension is understandable.	1	2	3	4	5
Information from Extension is easily obtained.	1	2	3	4	5
Information from Extension is user friendly.	1	2	3	4	5
Information from Extension is unbiased.	1	2	3	4	5
Information from Extension is trustworthy.	1	2	3	4	5
Information from Extension is helpful.	1	2	3	4	5

Q 11) On the continuum below, place an 'X' on the line position that would generally indicate about where you rate yourself in comparison with others of your peer group in respect to the time that you would typically begin using a new innovation (e.g. a new farming practice) on your operation.

0=Last Person to Use a New Practice First Person to Use a New Practice=10

0----------1----------2----------3----------4----------5----------6----------7----------8----------9----------10

Continue on Next Page

Q 12) From which source in each pair listed below do you tend to get most of the ideas you use for your farming operation? (Circle the one statement in each line you believe to be the most characteristic of you.)		
Statement 1		**Statement 2**
Impersonal	**Or**	Personal
Sources within your field of interest	**Or**	Sources outside your field of interest
Sources close at hand (e.g. neighbor, publications that come to you automatically)	**Or**	Sources relatively far away (e.g. publications you must subscribe to, people you have to make an effort to contact)
Sources that don't require much personal cash (e.g. free magazines, displays at meetings, free workshops)	**Or**	Sources which require personal cash outlays (e.g. books you have to purchase, courses that require a registration fee)
Sources that require quite a bit of your personal time (e.g. workshops, trips, college courses)	**Or**	Sources which do not take up much personal time (e.g. newsletters or mail you automatically receive, drop-in visits)

Q 13) Have you heard of the national Cooperative Extension website "eXtension" (please fill in one circle)?

○ Yes ○ No **(skip to question 16)**

Q 14) Have you used the website "eXtension" to obtain information (please fill in one circle)?

○ Yes ○ No

Q 15) Please use the scale below to indicate your level of agreement with the following statements about the web site "eXtension" (please circle only one number per line).	Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree
Cooperative Extension will become more popular due to the addition of eXtension.	1	2	3	4	5
eXtension increases the accessibility of Extension programming.	1	2	3	4	5
I envision using eXtension to answer my questions.	1	2	3	4	5
I envision finding answers to my questions faster by using eXtension.	1	2	3	4	5
eXtension will increase my use of Cooperative Extension resources.	1	2	3	4	5
eXtension will make the local Extension office less important in the future.	1	2	3	4	5
I envision myself trusting information obtained from eXtension.	1	2	3	4	5
eXtension will provide agriculture information relative to my particular farm.	1	2	3	4	5
eXtension should be publicized more by local Cooperative Extension offices.	1	2	3	4	5

Q 16) What do you consider your primary occupation (please fill in one circle)?

○ Farming ○ Other

Continue on Next Page

Q 17) Please indicate the value of sales for your farm in 2010 (please fill in one circle).

- Less than $1,000
- $1,000 to $2,499
- $2,500 to $4,999
- $5,000 to $9,999
- $10,000 to $19,999
- $20,000 to $24,999
- $25,000 to $39,999
- $40,000 to $49,999
- $50,000 to $99,999
- $100,000 to $249,999
- $250,000 to $499,999
- More than $500,000
- I would rather not say

Q 18) What is your gender (please fill in one circle)?

- Male
- Female

Q 19) Which describes you best (please fill in one circle)?

- American Indian or Alaskan Native
- Asian
- Black or African American
- Native Hawaiian or Other Pacific Islander
- White
- More than one race

Q 20) Are you of Spanish, Hispanic, or Latino Origin (please fill in one circle)?

- Yes
- No

Q 21) What is your age group (please fill in one circle)?

- Under 25 years
- 25 to 34 years
- 35 to 44 years
- 45 to 54 years
- 55 to 64 years
- 65 to 74 years
- 75 years and over

Q 22) What is the approximate size of your farm operation (owned plus leased land) (please fill in one circle)?

- 1 to 9 acres
- 10 to 49 acres
- 50 to 179 acres
- 180 to 499 acres
- 500 acres or more

Q 23) How many years have you been farming (please fill in one circle)?

- 5 years or less
- 6 to 10 years
- 11 to 20 years
- 21 to 30 years
- 31 to 40 years
- 41 years or longer

Q 24) What is the highest level of education you have received (please fill in one circle)?

- No high school diploma or GED
- High school diploma or GED
- Some college, but no degree
- Associates degree
- Bachelors degree
- Masters degree
- Professional degree (e.g. MD, JD)
- Doctorate (e.g. PhD, DBA)

Q 25) What type of connection do you use to access the Internet for your farm related business (please fill in one circle)?

- Dial Up (through telephone line)
- DSL (through telephone line)
- Cable
- Satellite
- Through wireless device (air card or Smart Phone)
- I don't have Internet access for my farm related business

Q 26) Please select from the list below any other devices other than a desktop or notebook computer that you also use for farm related business (you may circle multiple responses to this question).

- I use no other devices
- Smart Phone (Blackberry, IPhone, Droid, etc.)
- IPad or other notepad type computing device
- Global Positioning System (GPS) Unit
- Radio Frequency Identification (RFID) tags/reader

End of Survey